Coastal Hazardous Waste Site Review
30 June 1985

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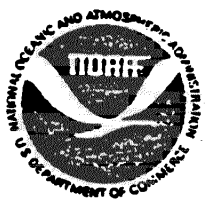

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EXECUTIVE SUMMARY

The National Oceanic and Atmospheric Administration (NOAA) has responsibilities as a Federal trustee for natural resources under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Responsibilities of trustees include not only assessment of damages to resources, but also carrying out restoration, rehabilitation, and replacement of those resources where possible.

In order to fulfill its responsibilities under CERCLA, NOAA has undertaken a review of uncontrolled hazardous waste sites under consideration by the U.S. Environmental Protection Agency's (EPA) Superfund program. In 1984 NOAA reviewed 274 sites in coastal areas to determine whether natural resources might be impacted by releases from these sites. Of these sites the 75 identified as the most serious were evaluated in detail. The results of this review were published in April 1984.

In 1985 an additional 135 sites were reviewed by NOAA. Most of these sites were drawn from Update #2 of the National Priorities List; the remainder of the sites were previously scored by EPA, but not reviewed by NOAA. The 20 most serious sites identified in this review are reported on here.

Each of the site evaluations conducted by NOAA has included a ranking of the site's proximity to natural resources, the severity of chemicals involved, and the resources potentially impacted. Ranking of sites by these criteria allows NOAA to set priorities for conducting investigations of damages and working with EPA to minimize the impacts to natural resources as a part of removal and remedial actions.

REVIEW METHODOLOGY

The intent of the review reported here is to identify uncontrolled hazardous waste sites which might pose a threat to resources for which NOAA is a trustee. The 135 waste sites evaluated in this report were drawn from the over 900 sites for which EPA has completed a Hazard Ranking System (HRS)[1] review. NOAA conducted an initial evaluation of these sites in April 1984[2]. This report is an extension of that effort. Of the 135 sites in the current review, 85 were contained in Update #2 to the National Priorities List released by EPA in October 1984. These 85 sites are located in counties bordering either the Atlantic or Pacific Oceans, or the Gulf of Mexico. The remaining 50 sites were originally scored by EPA prior to Update #2, but were not previously reviewed by NOAA. These sites are generally located near inland water bodies which support anadromous fish populations.

A NOAA Hazard Ranking Index, which includes a Proximity Index, Chemical Index, and Resources Index, has been developed to aid in the site evaluation process. Possible scores for both Proximity and Chemical Indices are zero, one, two, or three. Possible Resources Index scores are one, two, or three. NOAA criteria for scoring have a different emphasis than do the EPA HRS; as a result, sites receiving a low HRS score may have a high NOAA score. There is essentially no correlation between site scores under the two systems as a result of these differences (Figure 1).

The Proximity Index is a measure of the frequency with which various concentrations of contaminants from a site would reach resources of trusteeship interest to NOAA. This relationship between concentration and frequency is outlined in Table 1. Concentration values as shown reflect generalized ranges of significant levels of toxicity for most waste site chemicals of concern to EPA.

In many cases, the criteria, as defined in Table 1, could not be rigorously applied due to a lack of data specific to NOAA's interests. In these instances, the Proximity Index score was determined based on the intuition of the NOAA reviewer following an examination of available site information.

[1] The HRS site rating process was developed by EPA in order to establish the National Priorities List as specified by the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300).

[2] Ocean Assessments Division, 1984. Coastal Hazardous Waste Site Review April 13, 1984. NOAA/OAD, Seattle, Washington.

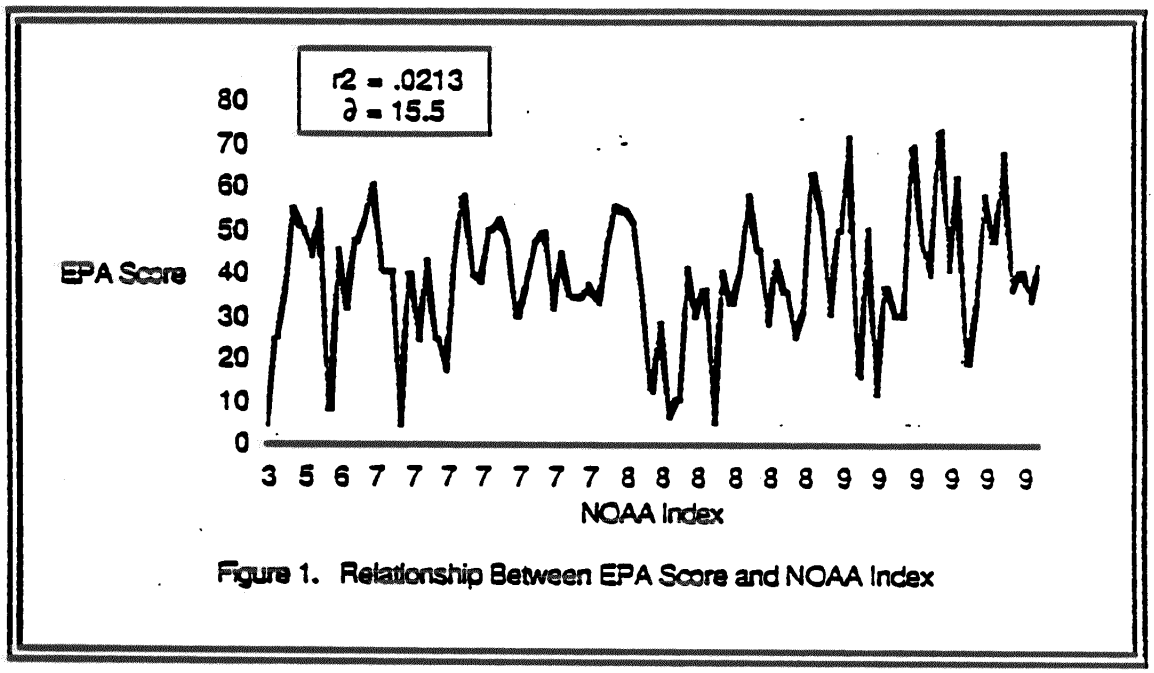


Figure 1. Relationship Between EPA Score and NOAA Index

A Proximity Index score of zero for a site, indicating no chance of meaningful concentrations of contaminants reaching resources of trusteeship interest to NOAA, resulted in that site being removed from further consideration in the site review process. Of the 135 sites, 115 were eliminated from the review process with a proximity score of zero. A total of 20 sites remained to be included in this site review document.

Table 1. NOAA Proximity Index

Concentration at resource	Frequency of Release: Infrequent (major flooding)	Occasional (periodic rainfall)	Continuous Source
below 10 ppb	0	0	1
10 ppb - 10 ppm	0	1	3
over 10 ppm	1	2	3

The Chemical Index is a measure of the severity, in terms of toxicity and persistence, of the most hazardous substance that could migrate from a site. Chemical Index scores are derived directly from EPA site scores ranked according to the HRS Waste Character criteria defined in the National Contingency Plan (Appendix A). Table 2 shows the HRS Persistence and Toxicity scale as it appears in Appendix A of the Plan, with the inclusion of NOAA Chemical Index scores (zero, one, two, or three) as established for purposes of this site review. There were no "zero" chemical scores among the sites reported here.

Table 2. Chemical Index

Persistence	Toxicity: No Toxicity (Sax/NFPA 0)	Slight Toxicity (Sax/NFPA 1)	Moderate Toxicity (Sax/NFPA 2)	Severe Toxicity (Sax/NFPA 3)
Non-persistent: (easily biodegradable)	0 (EPA 0)	0 (EPA 3)	0 (EPA 6)	0 (EPA 9)
Somewhat persistent: (straight-chain hydrocarbons)	0 (EPA 0)	0 (EPA 6)	1 (EPA 9)	2 (EPA 12)
Persistent: (substituted, other ring compounds)	0 (EPA 0)	1 (EPA 9)	2 (EPA 12)	3 (EPA 15)
Highly persistent: (metals, polycyclic compounds, halogenated hydrocarbons	1 (EPA 0)	2 (EPA 12)	3 (EPA 15)	3 (EPA 18)

The Resources Index is a measure of the value and extent of utilization of marine resources residing within or frequenting the area potentially affected by the site. Special emphasis is given to situations where human health effects may occur through food chain bioaccumulation or from recreation in an area possibly contaminated by the site. Table 3 outlines descriptors for this index. *(8/26/85)*

Table 3. Resources Index

Index	Typical Descriptors
1 (low)	Few distinctive marine resources and limited recreational use of the resource.
2 (medium)	Moderate commercial fisheries or recreational interests, habitat for adult marine mammals.
3 (high)	Intensive commercial, recreational, or subsistence fisheries, unique or highly important habitat for early life stages of marine mammals or anadromous fish, presence of endangered marine species.

The summation of index scores, from a maximum of nine to a minimum of three, provides a relative measure of a site's potential for affecting resources for which NOAA is a trustee. Figure 2 shows the regional distribution of sites by rank for sites reviewed by NOAA.

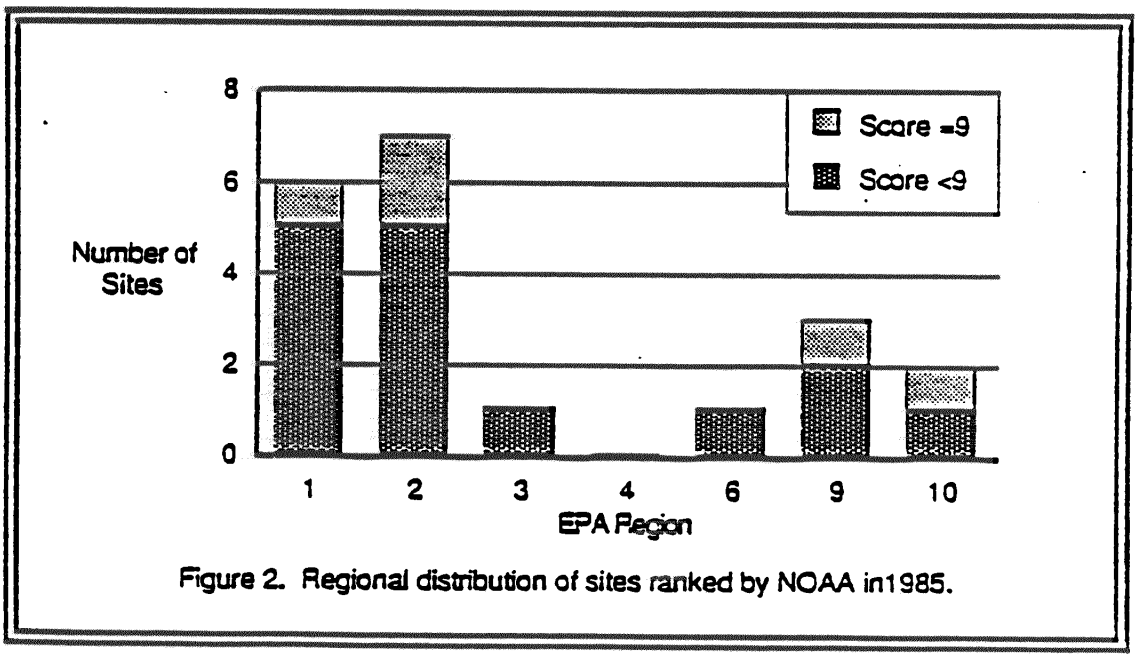


Figure 2. Regional distribution of sites ranked by NOAA in1985.

All the hazardous waste sites considered by NOAA in this review are contained in Table 4, including the NOAA Hazard Ranking Index and EPA HRS score.

Table 4. Hazardous Waste Sites Reviewed by NOAA, Reported June 1985.

NOAA #	SITE NAME	EPA SCORE
Connecticut		
I-50	Old Southington Landfill	55.71-51.35
I-51	Solvents Recovery Serv of New England	47.05-43.23
I-52	**Yaworski Waste Lagoon**	**36.72**
I-53	South Windham Landfill	N/A
Massachusetts		
I-54	Holden Dump	N/A
I-55	Hocomonco Pond	47.05-43.23
UD#2-I-2	Shpack Landfill	30.61-28.62
UD#2-I-3	**Haverhill Municipal Landfill**	**34.83**
UD#2-I-4	Salem Acres	35.45-33.73
UD#2-I-5	Norwood PCB's	30.61-28.62
Maine		
I-56	Winthrop Township Landfill	37.93-35.51
New Hampshire		
I-57	Kearsarge Metallurgical Corp.	40.71-37.93
I-58	**Grugnale Waste Disposal Site**	**<28.5**
I-59	Milford Municipal Landfill	N/A
I-60	**Savage Muni Water Supply**	**37.52**
I-61	**Sylvester**	**68.28**
I-62	South Municipal Water Supply	37.93-35.51
UD#2-I-1	**Coakley Landfill**	**<28.5**
Rhode Island		
UD#2-I-6	Central Landfill	47.05-43.23

New Jersey

II- 49	**Chipman Chemical**	N/A
II-118	Myers Property	35.45-33.73
II-119	**De Rewal Chemical Co.**	**35.70**
II-120	Pepe Field	35.45-33.73
II-121	Combe Fill South Lf	51.27-47.10
II-122	Dover Municipal Well 4	30.61-28.62
II-123	Asbestos Dump	40.71-37.93
II-124	Combe Fill North Lf	51.27-47.10
II-125	Sharkey Lf	51.27-47.10
II-126	Rockaway Boro Well Field	43.19-40.74
II-127	Radiation Technology Inc.	43.19-40.74
II-128	Rockaway Township Wells	30.61-28.62
II-129	Ringwood Mines/Landfill	55.71-51.35
II-130	W. R. Grace & Co., Inc.	51.27-47.10
II-131	**American Cyanamid, Co.**	**48.36**
II-132	**Krysowaty Farm**	**55.10**
II-133	Montgomery Township Housing Development	40.71-37.39
II-134	Rocky Hill Municipal Well	37.93-35.51
II-135	Metaltec/Aerosystems	51.27-47.10
II-136	AO Polymer	30.61-28.62
II-137	Barrier Chemical	N/A
UD#2-II-19	Pomona Oaks Residential Wells	33.66-30.77
UD#2-II-20	Lodi Municipal Well	33.66-30.77
UD#2-II-21	Cinnaminson Township Groundwater Contamination	37.93-35.51
UD#2-II-22	Glen Ridge Radium Site	51.27-47.10
UD#2-II-23	Montclair/West Orange Radium Site	51.27-47.10
UD#2-II-24	Fried Industries	33.66-30.77
UD#2-II-25	Waldick Aerospace Devices, Inc.	47.05-43.23

New York

II-138	GE - Moreau Site	58.30-55.79
UD#2-II-1	Samey Farm	33.66-30.77
UD#2-II-2	Haviland Complex	33.66-30.77
UD#2-II-3	**Applied Environmental Services**	**40.93**
UD#2-II-4	Pasley Solvents & Chemicals, Inc.	40.71-37.93
UD#2-II-5	Anchor Chemicals	37.93-35.51
UD#2-II-6	Hooker Chemical/Ruco Polymer Corp	51.27-47.10
UD#2-II-7	Claremont Polychemical	33.66-30.77
UD#2-II-8	Nepera Chemical Co., Inc.	40.71-37.93
UD#2-II-9	Suffern Village Well Field	37.93-35.51
UD#2-II-10	SMS Instruments, Inc.	37.93-35.51
UD#2-II-11	Kenmark Textile Corp.	33.66-30.77
UD#2-II-12	**Liberty Industrial Finishing**	**50.65**
UD#2-II-13	Preferred Plating Corp.	35.45-33.73
UD#2-II-14	Tronic Plating Co., Inc.	47.05-43.23
UD#2-II-15	Goldisc Recordings, Inc.	33.66-30.77
UD#2-II-16	**North Sea Municipal Landfill**	**33.74**
UD#2-II-17	Hertel Landfill	33.66-30.77
UD#2-II-18	Katonah Municipal Well	35.45-33.73

Pennsylvania

III-28	Walsh Landfill	33.66-30.77
III-29	Malvern TCE	47.05-43.23
III-30	Paoli PCB	N/A
III-31	Turco Coatings	N/A
III-32	Blosenski Landfill	30.61-28.62
III-33	Moyers Landfill	37.93-35.51
III-34	Stanley Kessler	35.45-33.73
III-35	Henderson Road	43.19-40.74
III-36	**Tyson Dump**	**63.10**

Maryland		
UD#2-III-1	Mid-Atlantic Wood Preservers, Inc.	43.19-40.74
UD#2-III-2	Kane & Lombard St. Drums	30.61-28.62
UD#2-III-3	Southern Maryland Wood Treating	35.45-33.73
Virginia		
UD#2-III-4	IBM Corp. (Manassas Plant Spill)	35.45-33.73
UD#2-III-5	L.A. Clarke & Son	35.45-33.73
Alabama		
IV-41	Ciba-Geigy Corp.	55.71-51.35
IV-42	Olin Corp.	40.72-37.93
North Carolina		
IV-43	PCB Spills	58.30-55.79
Florida		
UD#2-IV-1	Davidson Lumber Co.	35.45-33.73
UD#2-IV-2	Dubose Oil Products Co.	35.45-33.73
UD#2-IV-3	Peak Oil Co./Bay Drum Co.	58.30-55.79
UD#2-IV-4	City Industries, Inc.	33.66-30.77
UD#2-IV-5	Pratt and Whitney Aircraft	51.27-47.10
UD#2-IV-6	Montco Research Products,Inc.	30.61-28.62
Texas		
VI-14	San Jacinto Pits	N/A
UD#2-VI-1	North Calvacade Street	37.93-35.51
UD#2-VI-2	Sol Lynn/Industrial Transformers	40.71-37.93
UD#2-VI-3	South Cavalcade Street	40.71-37.93
UD#2-VI-4	Brio Refining Co., Inc.	51.27-47.10
UD#2-VI-5	Bailey Waste Disposal	55.71-51.35

California

UD#2-IX-1	San Fernando Valley (Area 3)	43.19-40.74
UD#2-IX-2	San Fernando Valley (Area 2)	43.19-40.74
UD#2-IX-3	San Fernando Valley (Area 1)	43.19-40.74
UD#2-IX-4	San Fernando Valley (Area 4)	37.93-35.51
UD#2-IX-5	Operating Industries, Inc. Landfill	51.27-47.10
UD#2-IX-6	**Montrose Chemical Corp.**	**33.85**
UD#2-IX-7	Firestone Tire (Salinas Plt)	30.61-28.62
UD#2-IX-8	Marley Cooling Tower Co.	33.66-30.77
UD#2-IX-9	**Alviso Dumping Areas**	**44.65**
UD#2-IX-10	**Zoecon Corp/Rhone-Poulenc, Inc.**	**31.03**
UD#2-IX-11	Fairchild Camera (Mountain View)	37.93-35.51
UD#2-IX-12	Intel Corp. (Mountain View Plant)	33.66-30.77
UD#2-IX-13	Raytheon Corp.	37.93-35.51
UD#2-IX-14	Teledyne Semiconductor	
UD#2-IX-15	Hewlett Packard	30.61-28.62
UD#2-IX-16	IBM Corp. (San Jose Plant)	30.61-28.62
UD#2-IX-17	Lorentz Barrel & Drum Co.	35.45-33.73
UD#2-IX-18	Van Waters & Rogers, Inc.	55.71-51.35
UD#2-IX-19	Applied Materials	33.66-30.77
UD#2-IX-20	Intel Corp. (Santa Clara III)	33.66-30.77
UD#2-IX-21	Intel Magnetics	33.66-30.77
UD#2-IX-22	National Semiconductor Corp.	37.93-35.51
UD#2-IX-23	Precision Monolithic, Inc.	33.66-30.77
UD#2-IX-24	Fairchild Camera (South San Jose Plant)	37.93-35.51
UD#2-IX-25	Advanced Micro Devices, Inc.	37.93-35.51
UD#2-IX-26	Monolithic Memories, Inc.	43.19-40.74
UD#2-IX-27	Signetics, Inc.	
UD#2-IX-28	Westinghouse Electrical Corp. (Sunnyvale Plant)	40.71-37.93

Hawaii

UD#2-IX-29	Kunia Wells I	40.71-37.93
UD#2-IX-30	Kunia Wells II	40.71-37.93
UD#2-IX-31	Mililani Wells	43.19-40.74
UD#2-IX-32	Waiawa Shaft	43.19-40.74
UD#2-IX-33	Waipahu Wells	40.71-37.93
UD#2-IX-34	Waipio Heights Wells II	35.45-33.73

Oregon

X-13	United Chrome Products, Inc	33.66-30.77
X-14	Teledyne Wah Chang Albany	54.27

Washington

UD#2-X-1	Toftdahl Drums	40.71-37.93
UD#2-X-2	Midway Landfill	55.71-51.35
UD#2-X-3	Quendall Terminal	42.00
UD#2-X-4	Northwest Transformer	35.45-33.73

NOAA Hazardous Waste Site Reports

Yaworski Waste Lagoon (I-52)
Canterbury, Connecticut
30 June 1985

Location and Nature of Site

Yaworski Waste Lagoon occupies 340 acres in Canterbury, Connecticut. The site consists of a lagoon which lies within a meander loop of the Quinebaug River. The lagoon originally measured 210 meters by 122 meters and 3.7 meters deep, surrounded by a two to three meters wide dike. As of September 1984, the lagoon had been completely backfilled and mounded to promote drainage away from the area. Open cultivated fields lie to the east and south of the site, with the areas north and west of the site consisting of wetlands, meadows, and trees.

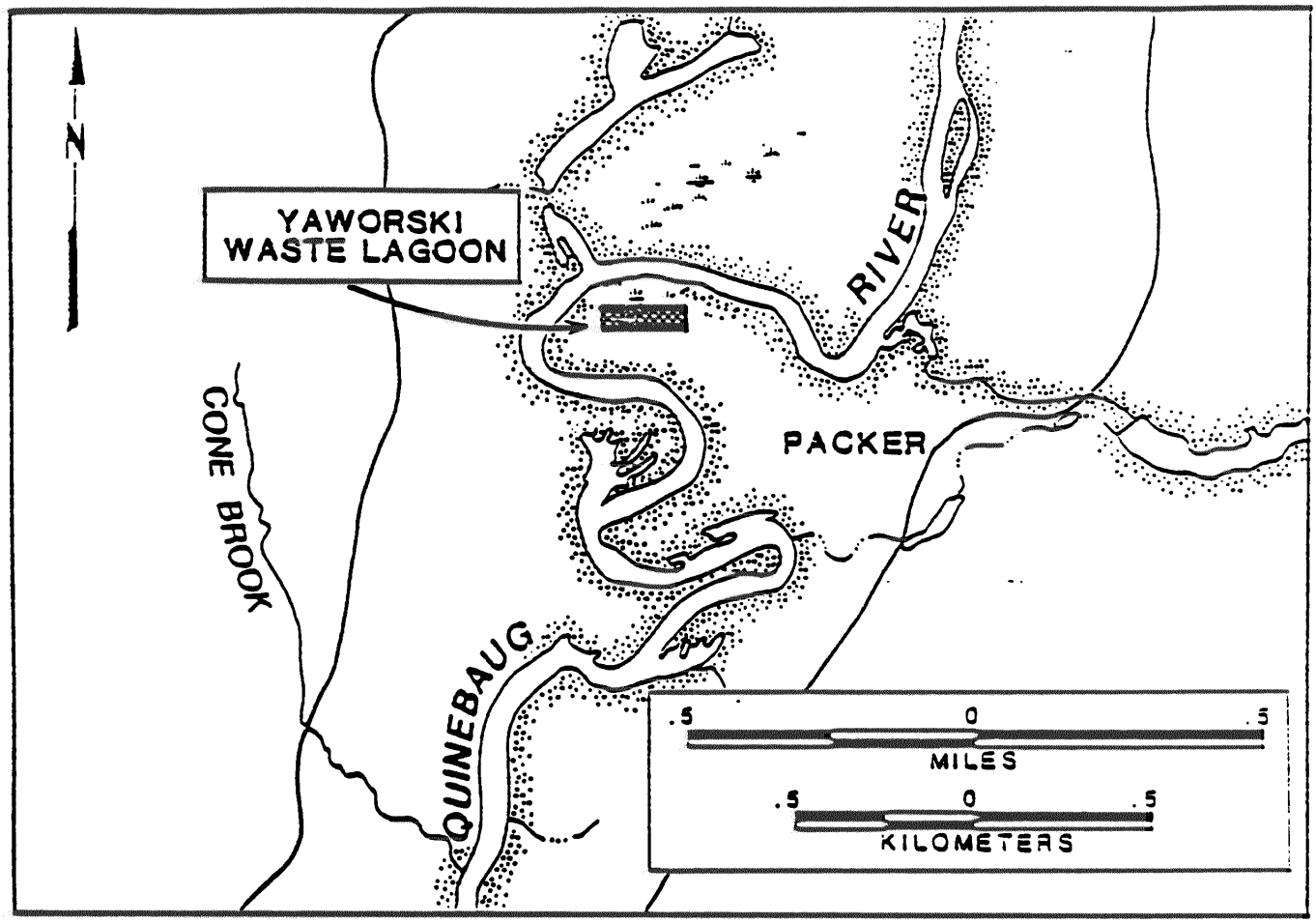
From about 1948 to 1973, drummed materials and bulk wastes (including textile dyes, solvents, resins, acids, and caustics) were accepted for disposal in the lagoon. In August 1973, the State of Connecticut issued an order to close the lagoon due to organic odors. In May 1980, EPA detected methyl ethyl ketone, ethyl benzene, toluene, and xylene in the lagoon and groundwater. The primary concern associated with the site appears to be the potential environmental impact of the contaminants on the Quinebaug River and adjacent wetland areas.

Proximity of Chemical Hazard to Marine Resources

Although the Yaworski lagoon lies within nine meters of the Quinebaug River, surface migration of contaminants offsite as a result of flooding is not likely. Groundwater is the primary source of concern for offsite contaminant migration; the bottom of the lagoon is believed to lie within the groundwater water table, at least during the peak spring river flows.

In 1983 the Connecticut Department of Health (DOH) sampled groundwater below the lagoon and found:

Methyl ethyl ketone (630-10,000 ppm)
Methyl isobutyl ketone (100-540 ppm)
Toluene (4.9-1000 ppm)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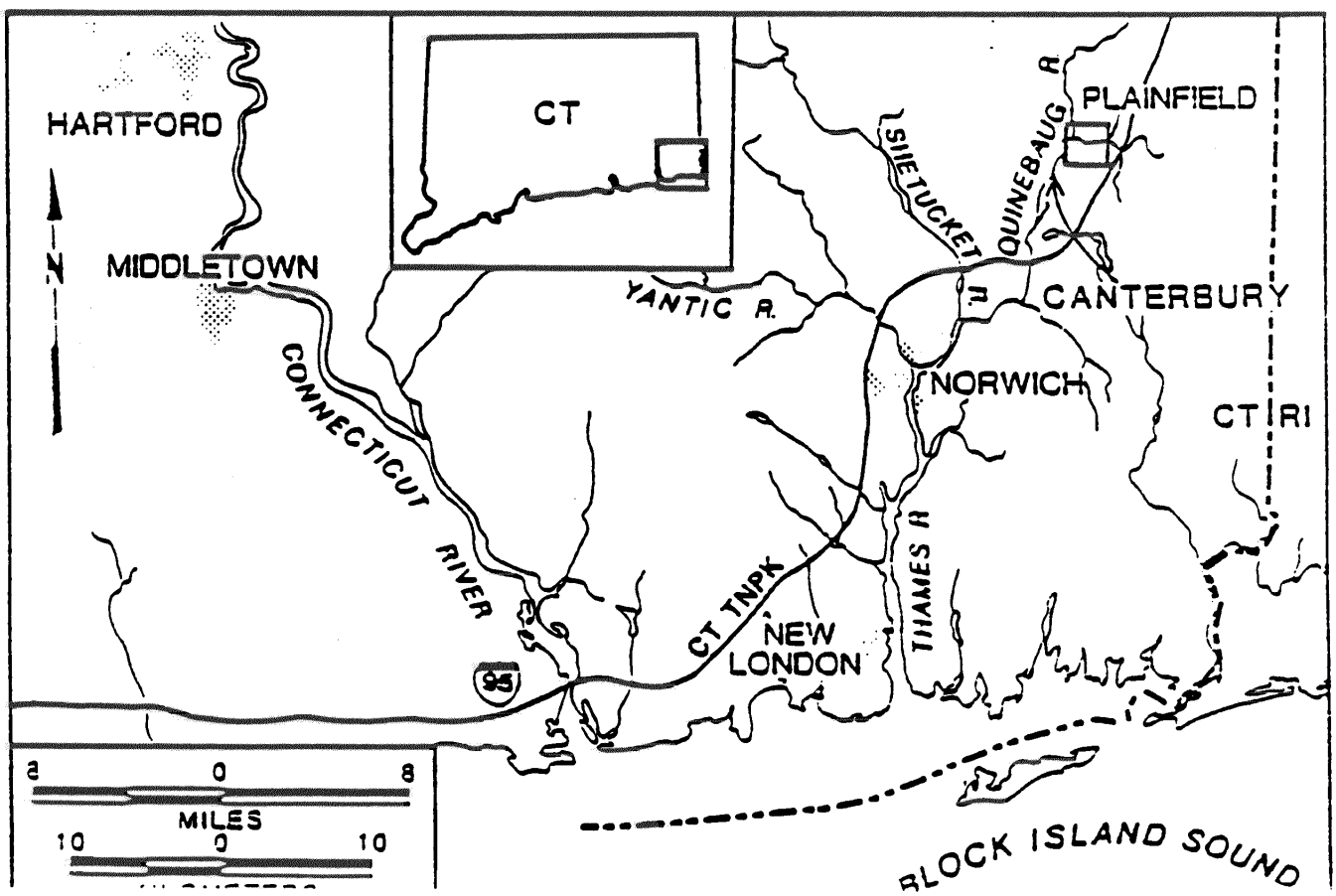
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CONNECTICUT RIVER
CT TNPK
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NEW
LONDON
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10 0 10
BLOCK ISLAND SOUND

Ethyl benzene (300-3800 ppm)
Xylene (300-3800 ppm)
Acetone (57-450 ppm)
Tetrahydrofuran (46-490 ppm)

In 1980, EPA sampled the groundwater in monitoring wells within a meter of the river and found methyl ethyl ketone, ethyl benzene, toluene, and xylene in concentrations from 2-50 ppm.

Surface water samples collected by EPA at the same time from the Quinebaug River midstream and downstream from the site contained methyl ethyl ketone, xylene, ethyl benzene, and toluene in the ppb range. However, sampling conducted in 1981 failed to find any detectable levels of volatile organic contaminants in the river. Further sampling is planned.

A surface water sampling program now being implemented may verify volatile organic contamination of the river at the ppb range. Considering the dilution factor of the river, this would indicate a very large volume of contaminated groundwater entering the river or another source. This could indicate possible localized impact on the benthic area downstream from the site in the groundwater recharge zone of the river. There is also a possibility that the contaminants found in the river do not originate from the waste lagoon site. There are indications that a landfill (also owned by Yaworski) downgradient of the lagoon site may also be a possibly serious pollution problem. EPA is still investigating this.

Marine Resources at Risk

The Thames River Estuary extends from the Atlantic Ocean inland for 24 kilometers to the first main fork in the vicinity of Norwich City. The west branch is the Yantic River and the east branch is the Shetucket River. There are three dams located on the Thames River system below the Canterbury. The Greenville Dam is on the Shetucket River adjacent to Norwich. Approximately three kilometers above this dam the river forks again; the west branch is the Shetucket and the east branch is the Quinebaug River.

The Connecticut Department of Environmental Protection (DEP) conducted a study from 1969 to 1974 to restock searun brown trout below the Greenville Dam. This effort was to establish return migrations of trout to the base of the dam, and litigation is in progress for constructing a fish ladder.

Historic records document abundant runs of American shad, Atlantic sturgeon, and Atlantic salmon in the 1830's. American shad were known to run far up the Quinebaug River. Today, migratory runs of American shad, alewife, and blueback herring exist only below the Greenville Dam.

The Quinebaug River system supports a normal-sized recreational fishing sector based on a bass and chain pickerel assemblage in the pools behind each dam. Trout fishing is prominent in the cascading portions of the river.

State of Connecticut and Federal fisheries biologists recognize that most of the stream tributaries entering the Quinebaug River above the Aspinook River are well suited for the spawning habitat requirements of Atlantic salmon. Although this fact will be one of the justifications for the fish migration restoration program of the Quinebaug River, no such program is currently in effect. Connecticut DEP is now in the progress of preparing the restoration plan for review by the U.S. Fish and Wildife Service.

Site Chronology

1948-1973	Site is used for the disposal of drummed and bulk liquid wastes, primarily organic solvents, acids, and caustics.
1965	Complaint filed against Yaworski site by Connecticut DOH regarding burning at site.
1965	Site purchased by Mr. James Yaworski.
April 1973	Connecticut DEP issued orders for cleanup on site, preventing any additional waste disposal
1976	Monitoring wells drilled adjacent to the lagoon; contamination of groundwater documented.
Dec. 1981	Engineering and hydrogeologic investigation of Yaworski Site completed.
May 1982	Consent Order issued by Connecticut DEP requiring owner to close dump, retain financial liability for maintenance for 30 years, and continue surface and groundwater monitoring.
May 1982	Potential Hazardous Waste Site Identification and Preliminary Assessment completed .
Dec. 1982	Yaworski Waste Lagoon listed on NPL.
Aug. 1983	Lagoon completely filled in and capped with clean dirt.
Oct. 1983	Remedial Action Master Plan completed.
Oct. 1984	Work Plan for Remedial Investigation/ Feasibility Study completed. RI/FS is concentrating on studies to determine contaminant migration which might impact the Quinebaug River and adjacent wetlands.

NOAA Reviewer: Sharon Christopherson, NOAA Hazardous Materials Response Branch
EPA Contacts: Richard Cavagnero
Steve Farrick
Kathy Burke
State Contact: Tom Stark

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Whiteley, Ronald, 1985. Personal Communication. Chairman, Thames River Valley Chapter - Trout Unlimited. Member of Thames Valley Watershed Association, Ledward, Connecticut.

Work Plan for Remedial Investigation/Feasibility Study: Yaworski Site, Canterbury Township, Windham County, Connecticut,1984. NUS Corporation. NUS Work Project No. 0787.01.

Haverhill Municipal Landfill (UD#2-I-3)
Haverhill, Massachusetts
30 June 1985

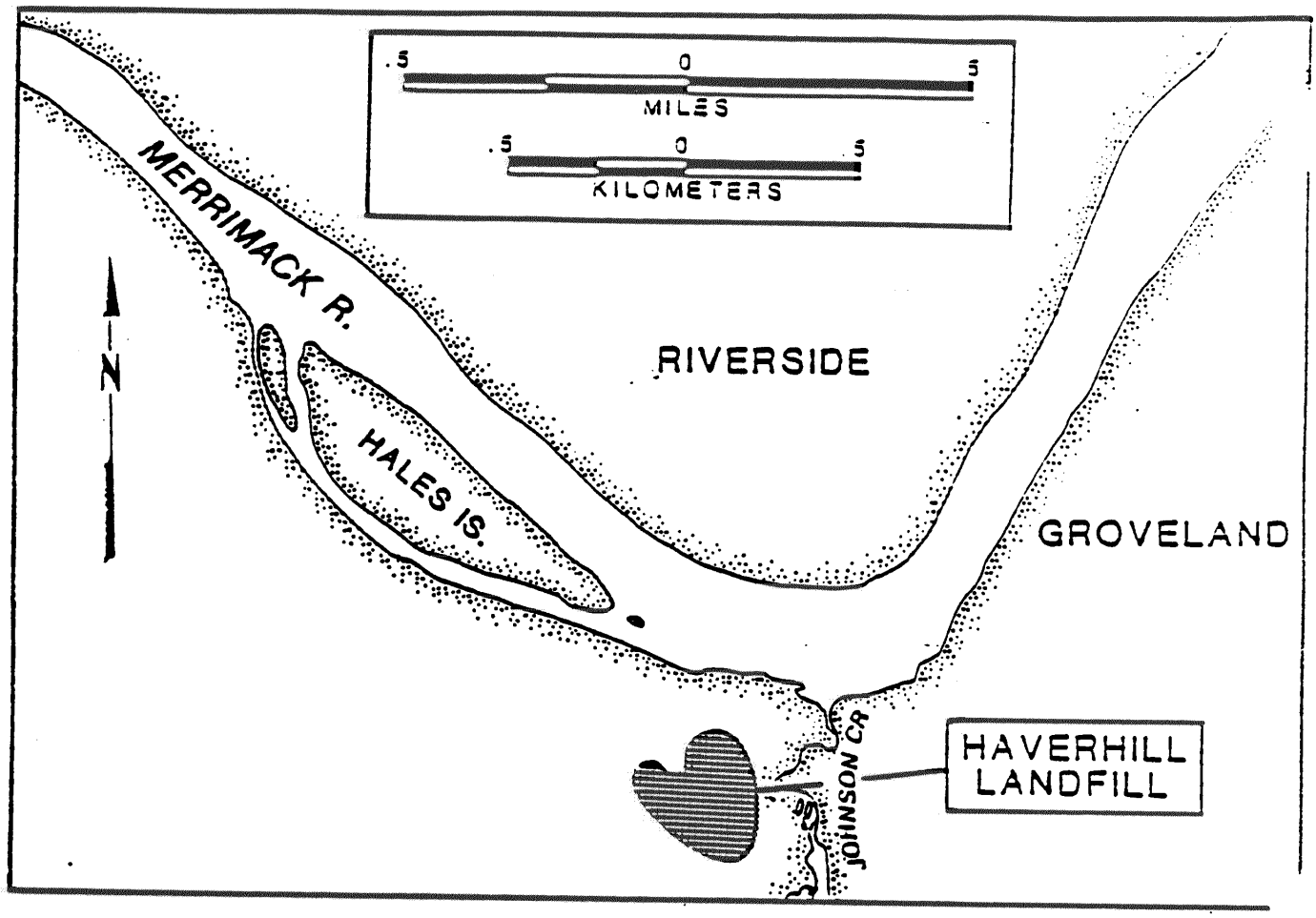
Location and Nature of Site

Haverhill Municipal Landfill covers 103 acres and is located southeast of downtown Haverhill, west of the town of Groveland. The site is bordered on the north by the Merrimack River; Johnson Creek flows along the eastern boundary of the site and empties into the Merrimack River. The municipal supply wells for Groveland are located east of the site on the other side of Johnson Creek.

The site is comprised of three tracts, including the original Haverhill Municipal Landfill, known to have been in operation since at least 1952 (prior to 1952, it was used as a borrow pit). Two tracts owned by Trimount Bituminous Products and the City of Haverhill make up approximately 50 acres and have been used primarily for disposal of municipal refuse. A third tract, adjacent to the Merrimack River, is also owned by Trimount Bituminous Products and is suspected of having been used for disposal of industrial wastes.

Aerial photographs taken between 1972 and 1978 indicate disposal of liquid wastes in the northeast corner of the site. The presence of liquid-filled trenches and bermed lagoons is evidence of bulk liquid disposal. Forty or more partially buried drums were present in two locations on the northern half of the site in 1977 and 1978, although there is no documentation of materials disposed of in the landfill.

Disposal activities on the site ended in 1981, with the exception of wastes from the Haverhill Water Treatment Plant and the Haverhill Paperboard Company. As part of a State of Massachusetts-monitored Final Closure Plan, these wastes are being used to help stabilize the sites's northeastern corner.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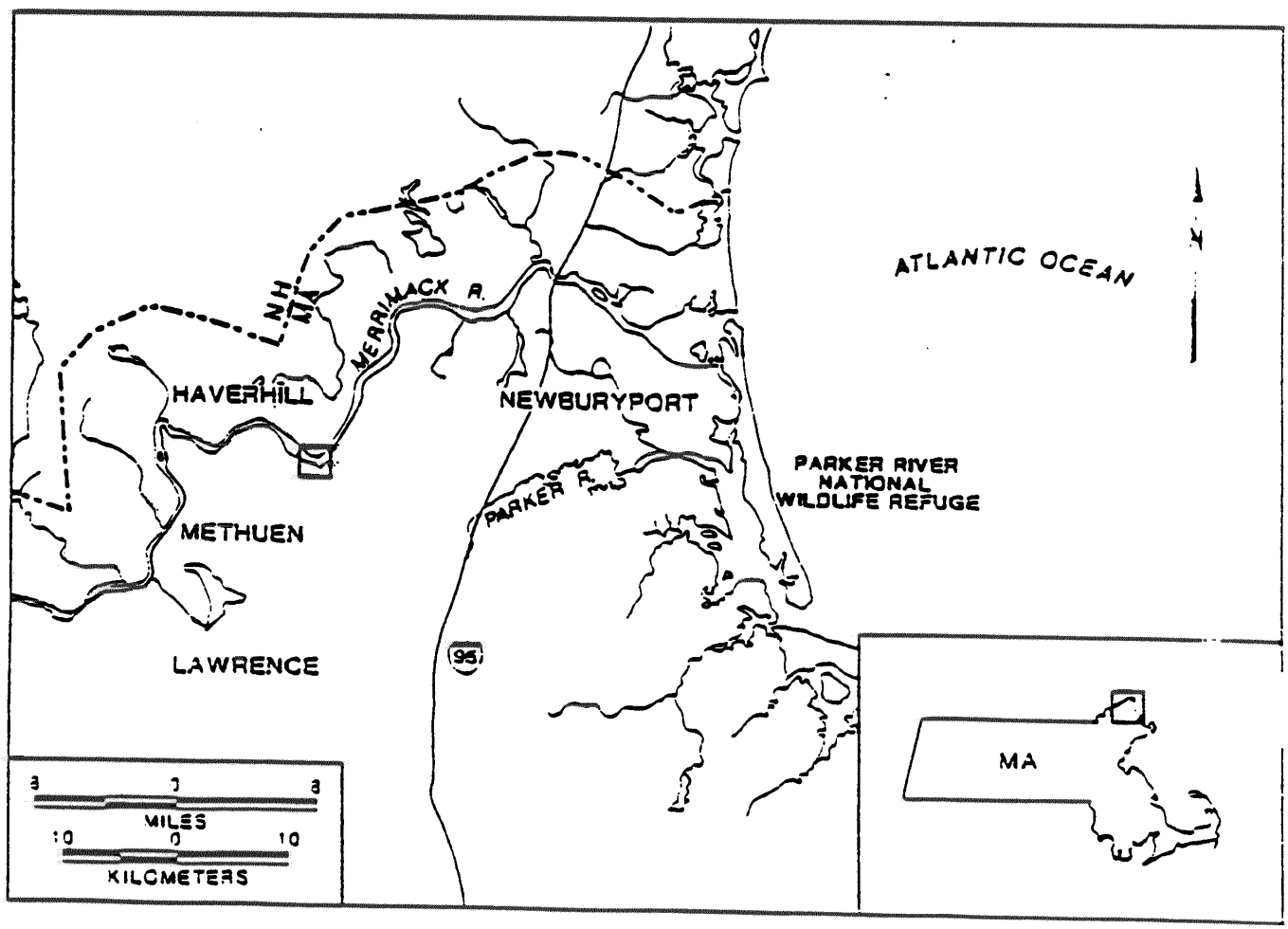
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Proximity of Chemical Hazard to Marine Resources

The primary routes of offsite contamination are surface runoff and groundwater discharge to Johnson Creek and the Merrimack River. The groundwater and surface water from the Haverhill Landfill is contaminated with volatile organics and heavy metals. Volatile organics have been detected in groundwater on the site since sampling began in 1971. Of these, only trichloroethylene and xylene were found in concentrations greater than 100 ppb. The 1985 Groveland Wells RI/FS looked at maximum surface water concentrations of organics in Johnson Creek, as well as two other nearby streams, and found levels in the .01-.30 ppb range, with trichloroethylene found in the highest concentration (.29 ppb). No detectable levels of organics were found in Merrimack River samples.

Heavy metal contamination detected at the site includes arsenic, chromium, lead, and cadmium. A surface water sample collected from an uncovered disposal area in the industrial disposal zone along the river contained 6,300 ppb chromium; 2,500 ppb lead; and 100 ppb cadmium. Surface water runoff collected along the eastern side of the site had elevated arsenic levels (170 ppb). Monitoring wells between the site and the river, installed in 1981, revealed heavy metal concentrations of 685 ppb arsenic,190 ppb chromium, and 325 ppb lead (over 3,000 ppb lead in one sample).

Marine Resources at Risk

The possible continuous discharge of large volumes of groundwater containing arsenic, chromium, lead, and cadmium into the river in the 100's ppb range represents a high mass loading of contaminants. These metals may chronically affect the benthic zone of the river. To date, no sediment samples have been collected and analyzed for either heavy metals or volatile organics.

This site directly impacts the anadromous fish resources of the Merrimack River. The Merrimack River system is divided into ten reach sections. The Haverhill site impacts Reach 1, which is approximately 48 kilometers long and extends from the coastal Salisbury jetty inland to the Essex dam at Lawrence, Massachusetts.

The Merrimack River Basin Fisheries Restoration Program involves several hatchery operations and the planned construction of fish passage devices at dam sites along the Merrimack River by the year 2000. After completion of restoration efforts, Atlantic sturgeon, rainbow smelt, and striped bass will use Reach 1 as their primary spawning and nursery habitat. Blueback herring, alewives, and American shad use will increase as stocks regenerate. Alewife spawning will occur in the freshwater tributaries of Reach 1, but success is restricted by man-made barriers on many streams.

Sea lamprey spawning is expected to be minimal in the reach. No suitable spawning areas exist in Reach 1 for Atlantic salmon, but salmon will transit the area to reach spawning grounds in the Merrimack's headwaters.

Site Chronology

1952	Earliest documentation of Haverhill Landfill being used for refuse disposal operations.
1972-78	Aerial photographs document disposal of bulk liquid and drummed wastes in northeast corner of Haverhill Landfill site.
June-Oct. 1979	Groveland Municipal Supply Wells closed because of volatile organic contamination. Haverhill suspected as possible source.
July 1980	Site reconnaissance conducted and samples collected.
Sept. 1980	EPA completes site inspection of Haverhill Landfill. State of Massachusetts is lead response agency.
May 1981	Waste disposal operations, with the exception of sewage sludge and beater wastes, discontinued at site.
Aug. 1981	City of Haverhill develops Final Closure Plan for Haverhill Landfill as part of groundwater study.
Oct. 1984	Haverhill Landfill proposed for NPL.
March 1985	RI/FS for Groveland Wells determines Haverhill Landfill may be contributing contamination, but is not primary source. EPA is now lead response agency.
May 1985	Photographic site analysis of Groveland Wells and Haverhill Municipal Landfill completed by EPA Environmental Monitoring Systems Lab.

NOAA Reviewer: Sharon Christopherson, NOAA Hazardous Materials Response Branch
EPA Contact: Jim Cirrillo
State Contact: Patricia Donahue

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Kuzmeskus, D.M., et al., 1982. Special Report. Anadromous Fish: Water and Land Resources of the Merrimack River Basin. The Policy and Technical Committees for Anadromous Fishery Management of the Merrimack River. U.S. Fish and Wildlife Service, Fishery Assistance, Laconia, New Hampshire.

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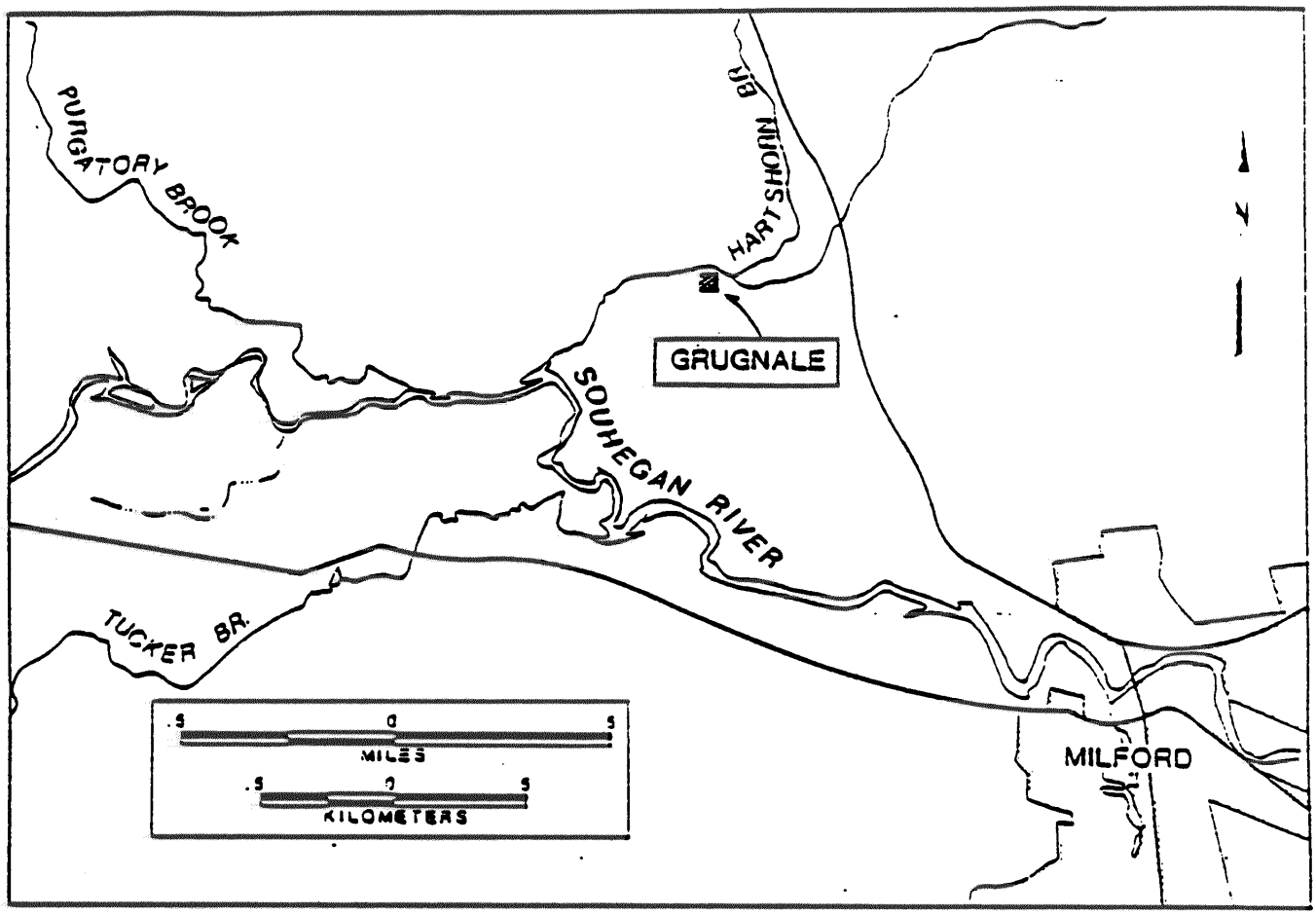
Grugnale Waste Disposal Site (I-58)
Milford, New Hampshire
30 June 1985

Location and Nature of Site

The Grugnale Waste Disposal Site occupies approximately 10.5 acres north of the Souhegan River in Milford, New Hampshire. Hartshorn Brook, northwest of the site, discharges to the Souhegan River 760 meters southeast of the Grugnale site. The Souhegan River flows into the Merrimack River approximately 19 kilometers downstream from the site at the Town of Merrimack. Although available data indicates that the Grugnale site has undergone extensive excavation and fill during the last ten years, it is presently level.

Aerial photographs taken between 1967 and 1974 document the disposal of scrap metal and automobiles on the site. As late as 1979, sand and gravel excavation occurred on part of the site, with the excavated area reportedly filled with demolition debris. Photographs, reports submitted to the New Hampshire Water Supply and Pollution Control Commission (NHWSPCC), and eyewitness accounts, indicate that between 200 and 1,500 barrels may have been disposed of on the site prior to 1977. However, a geophysical study done for EPA in 1982 failed to find any evidence of large numbers of drums buried on the site. In 1979, 16 vats of sodium hydroxide and 24 drums containing lubricating oil, paint thinner, and other solvents were also found on the Grugnale site.

The Grugnale Waste Disposal Site is not on the National Priority List. Following the Preliminary Assessment and Site Investigation Report, this site has been put in the inactive file. NHWSPCC plans to do a hydrogeological investigation of the Grugnale site in FY86/87 to determine the source of groundwater contamination. The New Hampshire Bureau of Sewage and Waste Management continues to sample the contaminated wells on the site on a periodic basis.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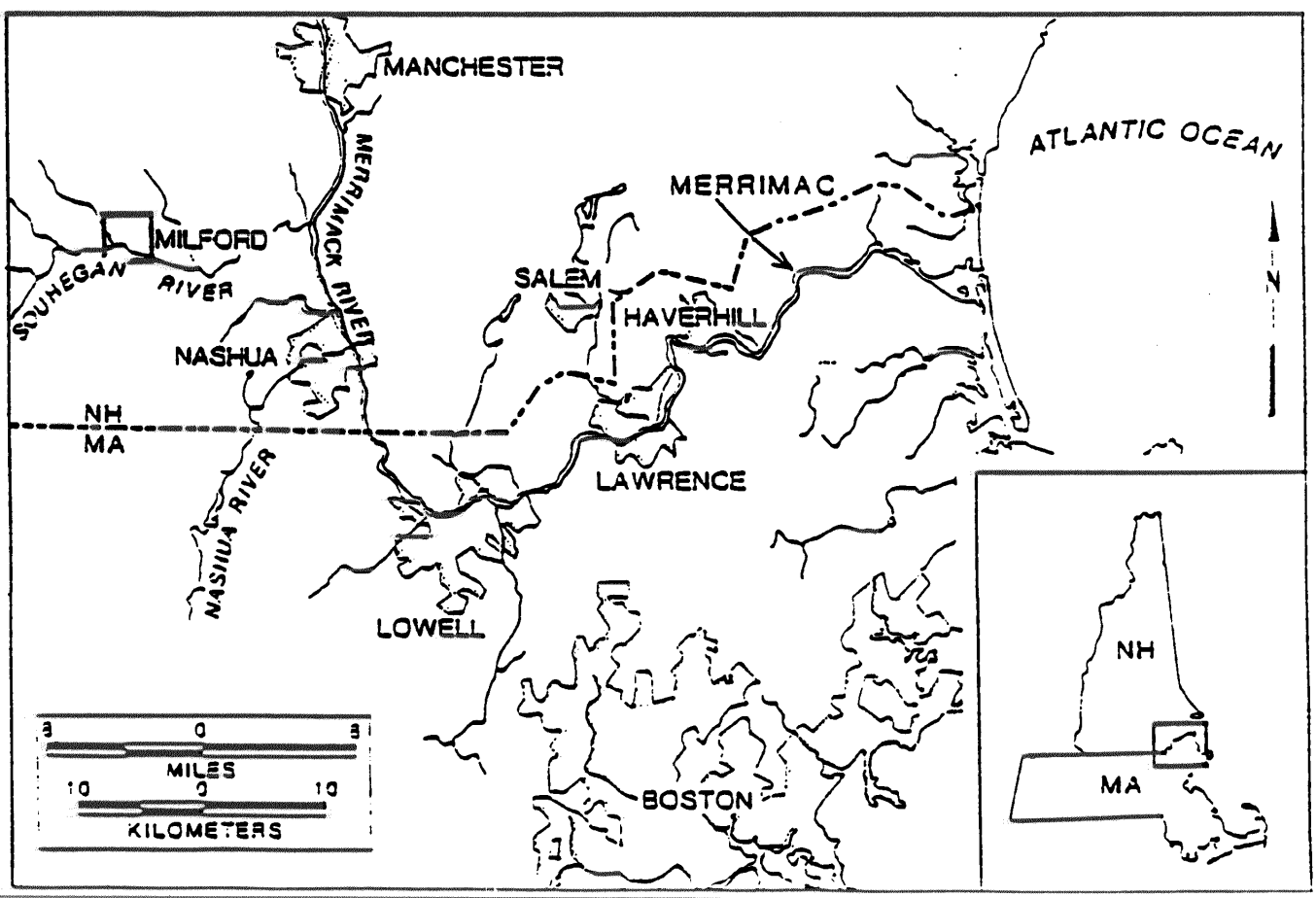
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Proximity of Chemical Hazard to Marine Resources

Surface water sampling conducted by NHWSPCC in 1980 detected 10-20 ppb toluene in Hartshorn Brook downgradient from the Grugnale site.

EPA sampling in 1981 detected benzene (50-80 ppb) and toluene (3-4 ppm) in two private wells on the Grugnale property. One of the wells also contained trace amounts of trichloroethylene and freon. The difference in organic compounds found in the two wells suggests that the contamination may be due to separate, isolated sources rather than large scale contamination of the entire site.

Marine Resources at Risk

This waste site may impact the anadromous fish resources of the Souhegan River and Merrimack River fish to a lesser extent. The Souhegan River has several dams, starting at the town of Merrimack near the confluence with the Merrimack River, and includes two dams in the Milford area. None of these structures have fish ladders and are therefore barriers to upstream migration. However, fish ladders are scheduled for installation on these dams in the 1990's as part of the Merrimack River Basin restoration effort.

The Essex and Pawtaucket dams are located on the Merrimack River downsteam from the Souhegan tributary. Both dams will have fish ladders in place by September 1985, allowing fish runs to extend up the Merrimack River above the Souhegan. By 1987, complete restoration of natural fish migration to the headwaters of the Merrimack is planned.

The U.S. Fish and Wildlife Service operates the National Nashua Fish Hatchery on the Nashua River near its confluence with the Merrimack River. The New Hampshire Department of Fish and Game (DF&G) operates a fish hatchery at Milford which releases hatchery-reared fry into the waters of the Souhegan River. These fry are able to survive downstream passage of all dams en route to the Atlantic Ocean. Atlantic salmon currently do not spawn naturally in any portion of the Merrimack River; both New Hampshire DF&G and the U.S. Fish and Wildlife Service capture adult Atlantic salmon near Lowell and truck them to the hatcheries for spawning. After the installation of fish ladders is complete on the Merrimack, Atlantic salmon are expected to ascend the river above Manchester to re-establish their natural spawning runs in the Peme River.

American shad restoration is also a high priority with New Hampshire DF&G and the U.S. Fish and Wildlife Service. Adult shad captured in the Connecticut River and released upstream of Lowell in the Merrimack River system have spawned, with fry returning to the Atlantic Ocean for maturation. Shad are expected to proliferate in the Merrimack River Basin, including the Nashua River tributary, after installation of fish ladders on all

of the dams.

Alewives, blueback herring, and rainbow smelt are able to migrate up to the Pawtaucket dam. Migrations upstream are expected to be re-established with the installation of fish ladders.

Site Chronology

1967-1974 Aerial photographs obtained by State of New Hampshire show excavation and disposal operations active on Grugnale property.

1972-1977 Alleged disposal of drummed chemical wastes on Grugnale property based on photographs and eye-witness accounts.

1979 Sixteen vats, 24 55-gallon drums, and assorted metal scrap found by New Hampshire Bureau of Solid Waste Management on Grugnale site.

March 1981 Preliminary Assessment and Site Investigation of the Grugnale Waste Disposal.

July 1982 Geophysical investigation of the Grugnale Waste Disposal Site completed.

NOAA Reviewer: Sharon Christopherson , NOAA Hazardous Materials Response Branch

EPA Contact: Camille Connick

State Contact: John Regan

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Kuzmeskus, K.M., et al., 1985. Special Report. Anadromous Fish: Water and Land Resources of the Merrimack River Basin. The Policy and Technical Committees for Anadromous Fishery Management of the Merrimack River. U.S. Fish and Wildlife Service, Fishery Assistance, Laconia, New Hampshire.

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Segarich, Victor, 1985. Personal Communication. U. S. Fish and Wildlife Service, Hatchery Manager, National Nashua Fish Hatchery.

Stolte, Larry, 1985. Personal Communication. U.S. Fish and Wildlife Service, Coordinator, Merrimack River Atlantic Salmon Restoration Program.

Thoits, Charles, 1985. Personal Communication. New Hampshire Department of Fish and Game, Milford Hatchery.

Savage Municipal Water Supply (I-60)
Milford, New Hampshire
30 June 1985

Location and Nature of Site

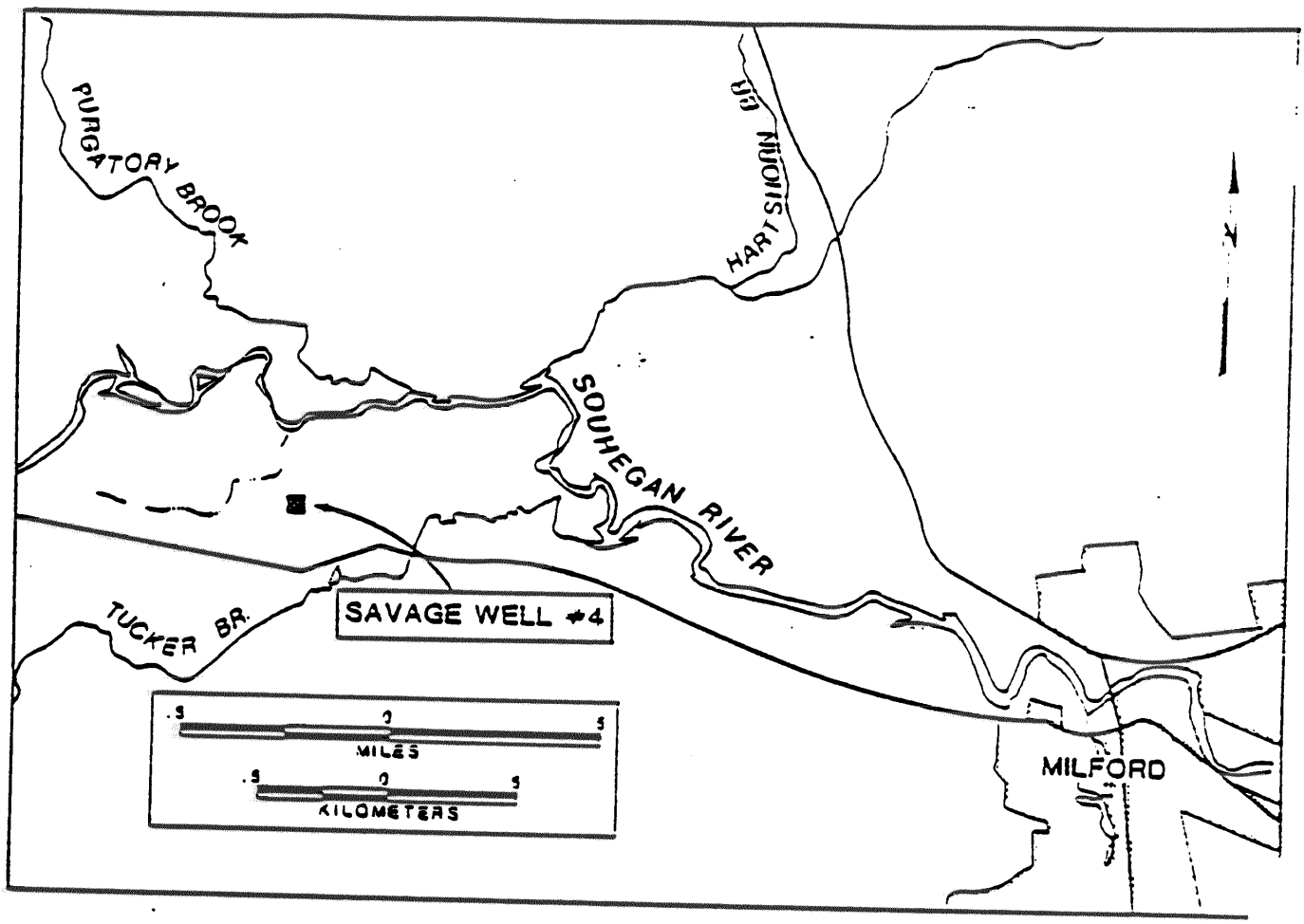
The Savage Municipal Water Supply site is located in Milford, approximately three kilometers west of the town center and 275 meters south of the Souhegan River. The Souhegan River empties into the Merrimack River approximately 19 kilometers to the east of this site. The area in the vicinity of the site is characterized by a variety of land uses ranging from agricultural to heavy industrial, interspersed with commercial and residential developments.

Savage Water Supply contains a gravel-packed well with a sustained yield of approximately 500 gallons per minute. The Town of Milford utilized this water supply, as well as its wellfield, from 1960 to 1983. The well was shut down in February 1983 when routine water quality monitoring by the New Hampshire Water Supply and Pollution Control Commission (NHWSPCC) detected high levels of volatile organic contaminants in the water. Four major industrial facilities, Hendrix Wire and Cable Company, Inc.; Hitchiner Manufacturing Company, Inc.; New England Steel Fabricators, Inc.; and O.K. Tool Company, located west and southwest of the well, are suspected of being the source of the contamination.

Proximity of Chemical Hazard to Marine Resources

In February 1983, the NHWSPCC detected the following contaminants in the Savage well:

1,1-dichloroethane	53 ppb
Trans-1,2-dichloroethylene	76 ppb
1,1,1-trichloroethane	317 ppb
Trichloroethylene	60 ppb
Tetrachloroethylene	862 ppb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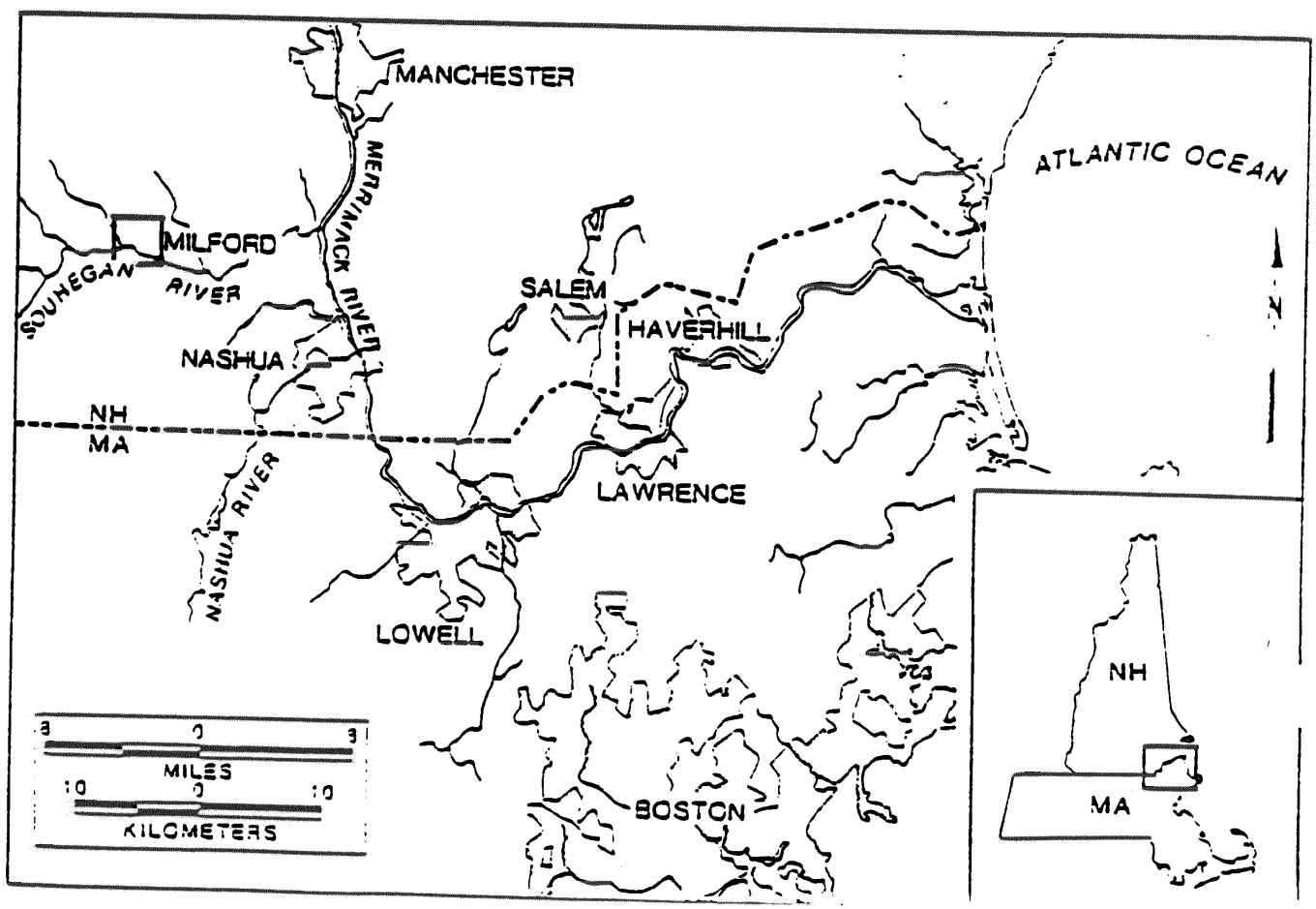
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The groundwater plume appears to extend from approximately one kilometer west of the well site to at least 335 meters east of the well site. The highest groundwater concentrations of the organic volatile contaminants (35,530 ppb) were found on the O.K. Tool Company property. Groundwater flow is toward the east at a rate of 35 cm/day. The contaminant plume is believed to have reached the Souhegan River; a section of the river is recharged by the groundwater. Monitoring wells located between the well site and the river north and northeast of the well have groundwater volatile organic concentrations of 300-1,600 ppb. Contamination appears to have spread to Keyes Municipal Well, located north of the river.

A discharge stream from the Hitchiner facility west of the well site drains directly into the Souhegan River. Surface water samples from this stream had volatile organic levels of over 4,000 ppb at the source. River surface water samples downstream from the discharge stream contained 12 ppb volatile organics. Hydrogeological studies have shown that this discharge stream is also recharging the underlying groundwater in the area.

Marine Resources at Risk

This waste site may impact the anadromous fish resources of the Souhegan River and Merrimack River fish to a lesser extent. The Souhegan River has several dams, starting at the city of Merrimack near the confluence with the Merrimack River, and including two dams in the Milford area. None of these structures have fish ladders and are therefore barriers to upstream migration. However, fish ladders are scheduled for installation on these dams in the 1990's as part of the Merrimack River Basin restoration effort.

The Essex and Pawtaucket dams are located on the Merrimack River downsteam from the Souhegan tributary. Both dams will have fish ladders in place by September 1985, allowing fish runs to extend up the Merrimack River above the Souhegan. By 1987, complete restoration of the natural fish migration to the headwaters of the Merrimack is planned.

The U.S. Fish and Wildlife Service operates the National Nashua Fish Hatchery on the Nashua River near its confluence with the Merrimack River. The New Hampshire Department of Fish and Game (DF&G) operates a fish hatchery at Milford which releases hatchery-reared fry into the waters of the Souhegan River. These fry are able to survive downstream passage of all dams en route to the Atlantic Ocean. Atlantic salmon currently do not spawn naturally in any portion of the Merrimack River. Both New Hampshire DF&G and the U.S. Fish and Wildlife Service capture adult Atlantic salmon near Lowell and truck them to the hatcheries for spawning. After the installation of fish ladders on the Merrimack, Atlantic salmon are expected to ascend the

river above Manchester to re-establish their natural spawning runs in the Peme River.

American shad restoration is also a high priority with New Hampshire DF&G and the U.S. Fish and Wildlife Service. Adult shad captured in the Connecticut River and released upstream of Lowell in the Merrimack River system have spawned, with fry returing to the Atlantic Ocean for maturation. Shad are expected to proliferate in the Merrimack River Basin after installation of fish ladders on all of the dams. Alewife, blueback herring, and rainbow smelt are able to migrate up to the Pawtaucket dam. The installation of fish ladders is expected to re-establish migrations upstream.

Site Chronology

Feb. 1983	NHWSPCC closes Savage Well and Milford Trailer Park water supply well because of volatile organic contamination.
March 1983	EPA approves Immediate Removal Action to connect Milford Trailer Park to municipal water supply.
April-Sept. 1983	Preliminary groundwater measurements done by NHWSPCC of Savage Wellfield, including the surrounding industrial facilities. Multiple sources of volatile organic contamination suspected.
Sept. 1983	Savage Water Supply site proposed for NPL.
March 1984	Site-specific hydrogeological study of the Hitchiner Manufacturing Company facility completed.
Nov. 1984	Site-specific hydrogeological study of the O.K. Tool Company facility completed.
Jan. 1985	Draft Report of the hydrogeological Investigation of the Savage Water Supply site completed by the Hydrogeological Investigation Unit of NHWSPCC.
June 1985	Four industrial facilities identified as responsible parties and issued Letters of Intent.
Fall 1985	RI/FS scheduled to begin.

NOAA Reviewer: Sharon Christopherson, NOAA Hazardous Materials Response Branch

EPA Contact: Camille Connick

State Contact: John Regan

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Sutton, Lester, 1983. Letter from Regional Administrator, U.S. Environmental Protection Agency Region 1, to Immediate Response Team, Emergency Response Division, March 9, 1983.

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Sylvester's (I-61)
Nashua, New Hampshire
30 June 1985

Location and Nature of Site

The Sylvester (Gilson Road) site is a six-acre open dump located behind the C & S Disposal Company garage on Gilson Road in Nashua, New Hampshire. The site is a former sand pit which was excavated in places to elevations below the seasonal high groundwater levels.

During the late 1960's, the operator of the pit began an unapproved and illegal waste disposal operation. Household refuse, demolition materials, chemical sludges, and hazardous liquid chemicals were dumped at the site at various times. Sludges and hazardous liquids were either mixed with the trash, allowed to percolate into the ground adjacent to the old sand pit, or stored in steel drums which were buried or placed on the ground surface. The State of New Hampshire was finally able to stop operations in October 1979.

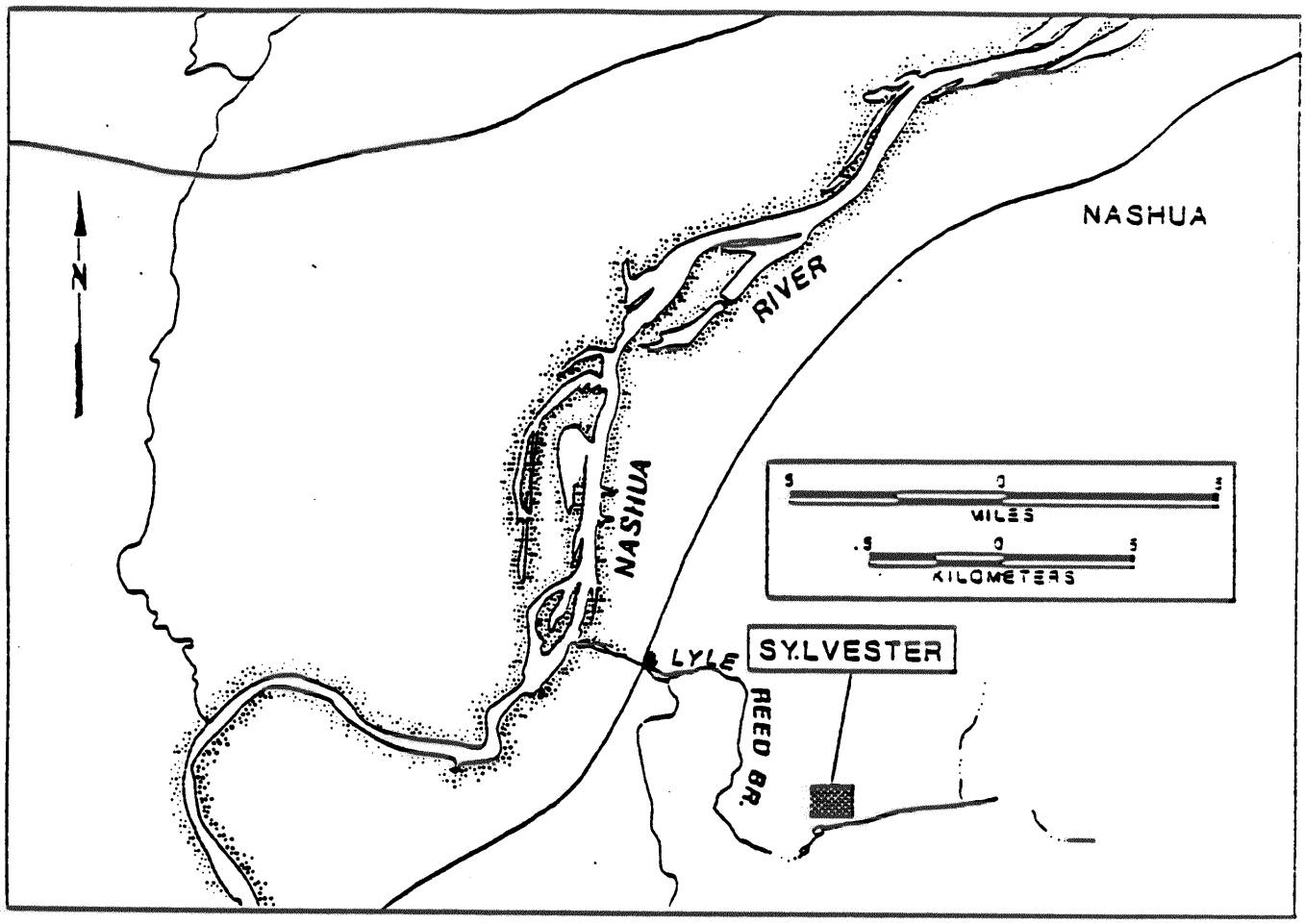
It is estimated that the site was used for hazardous waste disposal for approximately five years. Although the total volume of waste disposed of at the site is unknown, the quantity is believed to be quite substantial; over 1,000 steel drums were found and removed from the site in 1980.

Chemical Hazards

Proximity to Marine Waters

The primary pathway of offsite contamination is through the groundwater. Surface water runoff from the site flows into the disposal area and is not a direct pathway to marine waters. The major portion of the groundwater from the site flows approximately 200 meters in a northwesterly direction toward Lyle Reed Brook, and is then carried as surface water into the Nashua River. The balance of the groundwater flow from the site continues beneath the brook toward the Nashua River.

Flow from the Lyle Reed Brook enters the Nashua River approximately 11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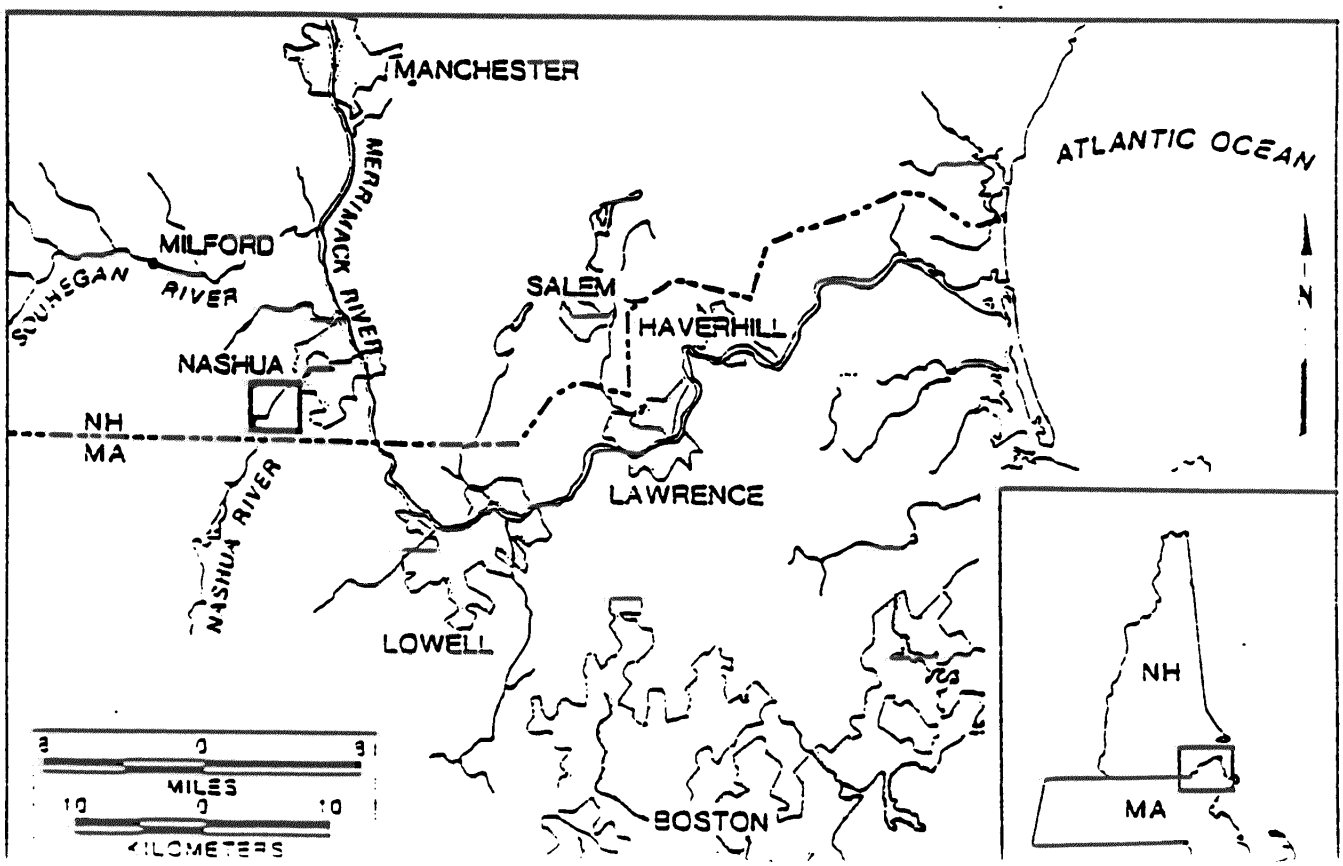
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kilometers upstream of the confluence with the Merrimack River. Nineteen to 21 kilometers further down the Merrimack River is the Pawtucket Dam at Lowell, Massachusetts. Dilution calculations carried out in 1981 indicated that, if nothing was done, contamination of the Nashua River by the Sylvester site would affect the water quality on the Merrimack River as far south as Lowell, where there are anadromous fish runs.

Contaminants and Concentrations

Groundwater monitoring wells near the site and between the site and Lyle Reed Brook were found to have concentrations of up to 1,200 ppm tetrahydrofuran; 100 ppm toluene; 48 ppm methylene chloride; 33 ppm methyl isobutyl ketone; 48 ppm acetone; and lesser amounts of vinyl chloride; chloroform;1,1,1-trichloroethane; trichloroethylene; benzene; and xylene. Heavy metals in wells nearest the site included 1,700 ppb arsenic, 10 ppb cadmium, and 500 ppb lead.

Surface water contamination measured in Lyle Reed Brook included 2,700 ppb toluene; 7,650 ppb tetrahydrofuran; 20 ppb ethyl benzene; 16 ppb xylenes; and trace amounts of benzene.

Physical Extent of Contamination

The contaminated groundwater zone is approximately 200 to 210 meters wide at the disposal site, with little or no additional lateral dispersion as the contaminant plume migrates northwest. In November 1982, there was evidence that the leading edge of the plume extended beyond Lyle Reed Brook, with the most contaminated zone extending from the disposal site to within 30 meters of the brook.

Duration of Contaminant Release

Volatile organic contaminants in groundwater from the site, first detected in Lyle Reed Brook in March 1980, steadily increased until completion of an underground slurry wall at the site in November 1982. The slurry wall prevented the most contaminated part of the groundwater plume from reaching Lyle Reed Brook. However, the part of the plume which had already reached the brook and beyond was not contained. Estimated travel time for the forward edge of the groundwater plume which escaped the slurry wall to the river is two to five years, or 1982-1985. A quarterly monitoring program has not detected any contaminants in the Nashua River, either because the plume has not reached there or because of dilution.

Marine Resources

Resources at Risk

This site impacts the anadromous fish resources of the Nashua and Merrimack Rivers. The Merrimack River Basin Fisheries Restoration Program involves several hatchery operations and the planned construction of fish passage devices at damsites along the Merrimack River by the year 2000. Target species are the Atlantic salmon and the American shad. The plan calls for achieving return runs of 3,000 adult Atlantic salmon and 1,000,000 adult American shad to the mouth of the Merrimack River.

The mainstream of the Merrimack River is expected to provide spawning and nursery habitat for alewives, blueback herring, American shad, striped bass, and sea lampreys after installation of fish passages. Atlantic salmon will only use the area as a migratory route to the headwaters of the Merrimack above Manchester.

The Nashua River will provide suitable habitat for shad, alewives, bluebacks, and sea lampreys' spawning and nursery use following restoration. Atlantic salmon parr will also use these tributaries as nursery grounds. Four fish passages are planned for construction on the Nashua River dams as part of the overall restoration plan.

The U.S. Fish and Wildlife Service operates the Nashua National Fish Hatchery. It is located on the Nashua River near its confluence with the Merrimack River. This hatchery is actively trying to re-establish anadromous fish runs in the Merrimack River.

The New Hampshire Department of Fish and Game (DF&G) operates a hatchery at Milford on the Souhegan River which produces coho salmon, Atlantic salmon, sea run brook trout, and steelhead trout. The Sylvester site may impact fry and juvenile hatchery fish released by the facility once they enter the mainstream waters below the Nashua River or if they enter the Nashua River for nursery use.

The potential exists for damage to Atlantic salmon and American shad hatchery operations conducted on the Merrimack River by the U.S. Fish and Wildlife Service and New Hampshire DF&G. Specifically, contaminated groundwater from the Sylvester site is hypothesized to be a direct threat to developing demersal eggs of American shad that may spawn in the Nashua River and Lyle Reed Brook. Alewives, blueback herring, and rainbow smelt also have demersal-type eggs.

Routine hatchery activities related to spawning and rearing of Atlantic salmon at the Nashua National Fish Hatchery may be affected by contaminants entering the hatchery water intake.

Ability to Document Injury or Loss

Although monitoring wells situated nearest the site and Lyle Reed Brook indicate significant concentrations of volatile organics and heavy metals, there is no conclusive evidence that the site has caused serious injury to the fishery resources of the Nashua River or mainstream of the Merrimack.

The discharge from the Sylvester site is only one contributing source to the pollutant loading of the Nashua River system. The combined effects of all pollutants in the Nashua River may be contributing to a general reduction in the extent of nursery grounds, including those of the Atlantic salmon.

Any documentation of the deleterious effects of the site on the restoration efforts of Atlantic salmon and American shad will be extremely difficult to substantiate. This fact is attributable not only to the pollutant contributions from other waste sites in the area, but also to the impact of offshore commercial fishing of shad and salmon. Evaluation of the results of the restoration effort will be further complicated by increasing recreational fishing activities on the mainstream and its tributaries.

Feasibility of Habitat or Resource Restoration

Assuming that contamination of sediments is not significant, habitat restoration is highly feasible. Renewal and treatment of the contaminated groundwater plume should significantly lower the concentrations in the Nashua and Merrimack Rivers to acceptable levels. Considering that a fishery restoration program is planned and in progress, the timely cleanup of the site should be highly beneficial to the overall program.

Site-Related Actions

Summary of EPA/State Response Actions

The dumping at the site was first discovered in late 1970. After several court appearances and court actions, an injunction was issued in 1976 to remove all hazardous waste material from the site. However, operations continued, and in November 1978, State of New Hampshire personnel observed drums being stored at the site. A court order was issued in October 1979 prohibiting all further disposal of hazardous wastes on the site.

Between June 1980 and June 1982, EPA, first under Section 311 of the Clean Water Act and later under CERCLA, installed a system to temporarily pump and recirculate contaminated groundwater. In 1980, the City of Nashua and the State of New Hampshire contributed to fencing the site, removal of 1,300 drums, and installation of alternate water supply lines to individuals with contaminated wells.

In August 1981, the State of New Hampshire, under a cooperative agreement with EPA, began the design and construction of a slurry wall and

cap to permanently contain contaminated groundwater on-site and a feasibility study to evaluate alternatives for treating contaminated groundwater.

Present Stage of EPA Action at the Site

The State of New Hampshire has the lead on this site and has named it the priority site for the state. Remedial action is well underway. The 20-acre slurry wall was completed in November 1982. The groundwater treatment system is currently under construction and is scheduled for completion by September 16, 1985. The treatment operations should begin by mid-October 1985 and are expected to operate for 1.7 years. This site has progressed beyond where NOAA might play a part in remedial action discussions.

Responsible Parties with Adequate Means Identified

No responsible parties with adequate means have yet been identified. Mr. William Sylvester, owner of the property, does not have sufficient financial assets for EPA to recover cleanup costs. Cannon Engineering and C & S Disposal have also been named as having disposed of hazardous materials at the site. EPA has taken the lead in investigating these and additional responsible parties.

Interest of Co-Trustees in Damage Assessment Investigations

The State of New Hampshire, EPA, and U.S. Department of the Interior are primarily interested in cleaning up this site before it can adversely affect the current and planned restoration of anadromous fish runs in the Merrimack River. Damage to existing resources is probably limited to a contribution to the general degradation of water quality in the Merrimack River. The only direct effects that might be assessed would be on the U.S. Fish and Wildlife Service hatchery operation in the Nashua River.

Site Chronology

1970's	First discovery of illegal dumping activity at the site.
1976	Court injunction to remove all materials from site ignored by operator.
1975 -1979	Hazardous wastes dumped at site.
Nov. 1978	State of New Hampshire observes drums being stored on site.
Oct. 1979	Court order issued prohibiting disposal of hazardous wastes on the site.
June 1980	City of Nashua and State of New Hampshire contractors remove 1,314 drums from site.

July 1981	Groundwater testing shows contamination plume under site moving toward Lyle Reed Brook and Nashua River.
Aug. 1981	Cooperative Agreement between EPA and New Hampshire Water Supply and Pollution Control Commission to do RI/FS and cleanup.
Nov. 1982	Completion of slurry wall to contain contaminated groundwater plume on site.

NOAA Reviewer: Sharon Christopherson, NOAA Hazardous Materials Response Branch
EPA Contact: Tim Porter
State Contact: Paul Heirtzler

References

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Coakley Landfill (UD#2 I-1)
North Hampton, New Hampshire
30 June 1985

Location and Nature of Site

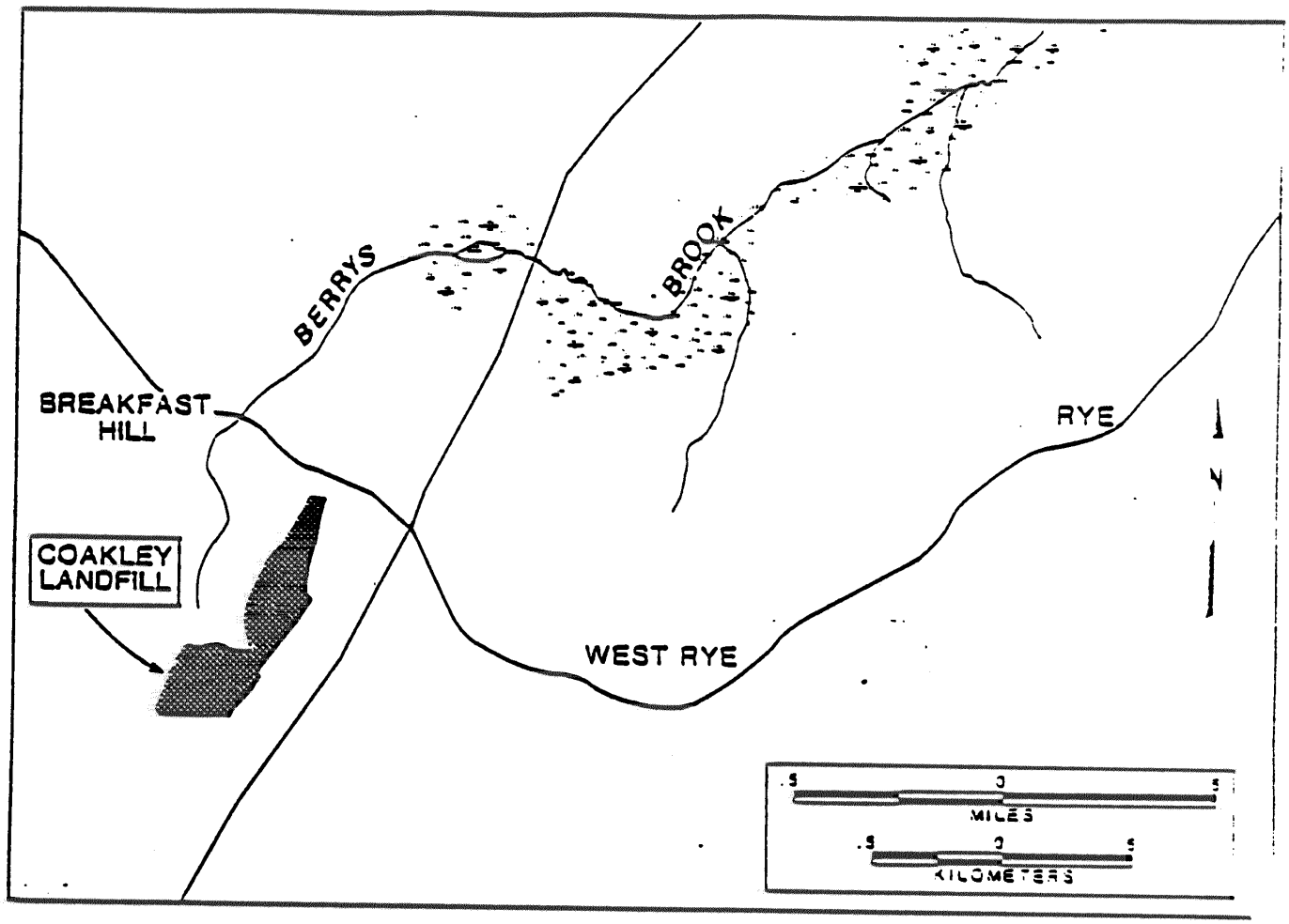
The Coakley Landfill covers 20 acres in a residential area of North Hampton, New Hampshire. The site was a sand and gravel operation prior to receiving a state permit in 1971 to operate as a sanitary landfill. Under a 1972 agreement, the owner was responsible for compaction and cover material for the domestic disposal operation, and the City of Portsmouth was to manage the disposal of incinerator ash from the Portsmouth Refuse-to-Energy Project. There is no specific documentation of industrial or hazardous waste disposal operations at the site.

The landfill is suspected of contaminating groundwater and the wetlands area north of the site. There is evidence of offsite migration of volatile organic contaminants in both surface water and groundwater. The presence of volatile organic solvents has forced the closing of 13 private residential wells to the north, east, and south of the landfill.

Proximity of Chemical Hazard to Marine Resources

The Coakley Landfill site consists of two areas, an extraction area to the north and a fill area to the south. The landfill is located on a surface recharge zone for two aquifers. Surface water and, presumably, groundwater, leave the site in a number of different directions. Surface drainage is particularly evident along the western boundary of the site, reaching the adjacent wetland. Berrys Brook, North Brook, and Little River are potentially downgradient of the site. Although surface water runoff from the site is not believed to reach as far as the streams, all three are at risk from contaminated groundwater.

Contamination of Berrys Brook was documented in sampling conducted by the State of New Hampshire in January 1984. Testing only for volatile organics, toluene (29 ppb), acetone (183 ppb), tetrahydrofuran (31 ppb),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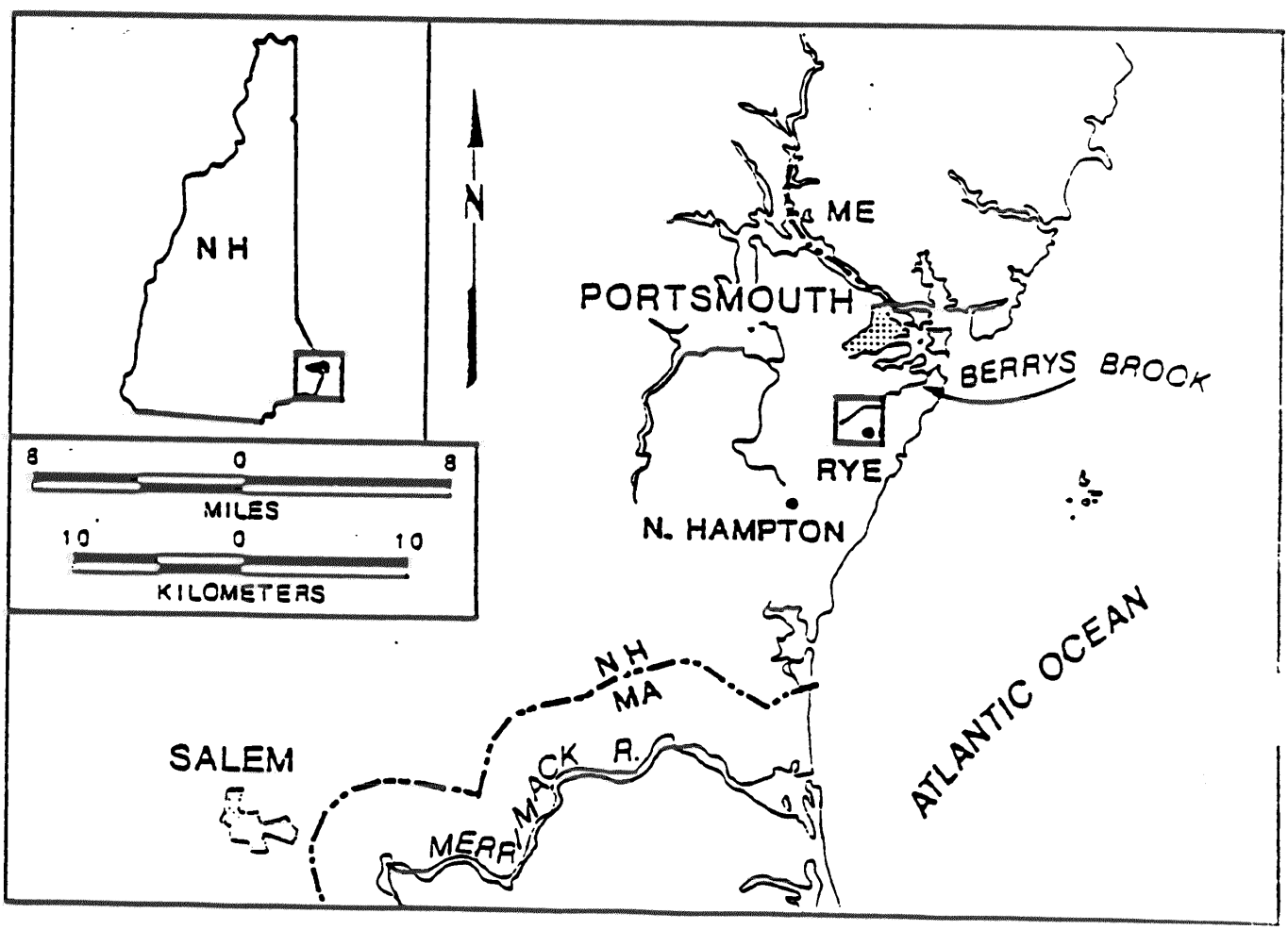
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methyl ethyl ketone (176 ppb), and methyl isobutyl ketone (19 ppb) were detected in surface water samples from the brook.

The chemical index for this site is based on the volatile organic chemicals that were found in the surface water of Berrys Brook. Samples currently being collected by the State of New Hampshire from the site and nearby surface waters will be analyzed for heavy metals, pesticides, and PCB's. NOAA will re-evaluate the chemical index of this site if these contaminants are present in Berrys Brook.

The State of New Hampshire has the lead on this site and is preparing a proposal for the RI/FS to submit to EPA this summer.

Marine Resources at Risk

Berrys Brook, which flows east approximately ten kilometers to Rye Harbor, has established spawning runs of searun brown trout. Natural spawning in the stream is augmented by spring and summer stockings of hatchery-reared fish. Recreational sportfishing activity along Berry Brook has been increasing over the last few years.

In addition to trout runs, alewife, blueback herring, American shad, and rainbow smelt have spawning runs in most of the streams and rivers in the area. Although not investigated by the New Hampshire Department of Fish and Game, it is believed that these species also utilize Berrys Brook and other tributary streams connecting to Rye Harbor.

Rye Harbor shoreline is mostly bulkheaded, with a navigable inlet connecting directly to the Atlantic Ocean. The entire harbor area is less than 600 acres in size. There are no harvested shellfish beds in the harbor area; however, in the inlet channel and immediately seaward of the inlet, numerous traps indicate a significant active lobster fishery.

Site Chronology

Sept. 1969	Earliest photo coverage showing active landfilling operations going on at the Coakley site.
June 1972	Coakley permitted by state for landfilling sanitary refuse.
April 1973	Photographic documentation of site's continued operation .
April 1977	Photographic documentation of site's continued oepration.
Oct. 1982	Office of Solid Waste permits City of Portsmouth to dispose of incinerator ash.
Feb. 1983	Following citizen complaints, supply well to residents of Lafayette Terrace sampled by New Hampshire Department of Public Health and EPA and determined to be unsafe for consumption.

March 1983	New Hampshire Bureau of Solid Waste Management collects samples from surface waters and seeps at Coakley Landfill.
March 1983	State of New Hampshire issues Consent Order requiring preparation of hydrogeological report and installation of monitoring wells around site.
Aug. 1983	EPA conducts on-site inspection of Coakley Landfill and observes presence of leachate streams and seep breakouts.
Jan. 1984	State of New Hampshire collects samples of surface water from Berrys Brook. Presence of volatile organic contaminants documented.
Summer 1985	RI/FS proposal is due for submission by the state to EPA.

NOAA Reviewer: Sharon Christopherson, NOAA Hazardous Materials Response Branch

EPA Contact: Tim Porter
Sally Edwards

State Contact: Muriel Robinette

References

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Chipman Chemical (Reagent Chemical Company) (II-49)
Middlesex, New Jersey
30 June 1985

Location and Nature of Site

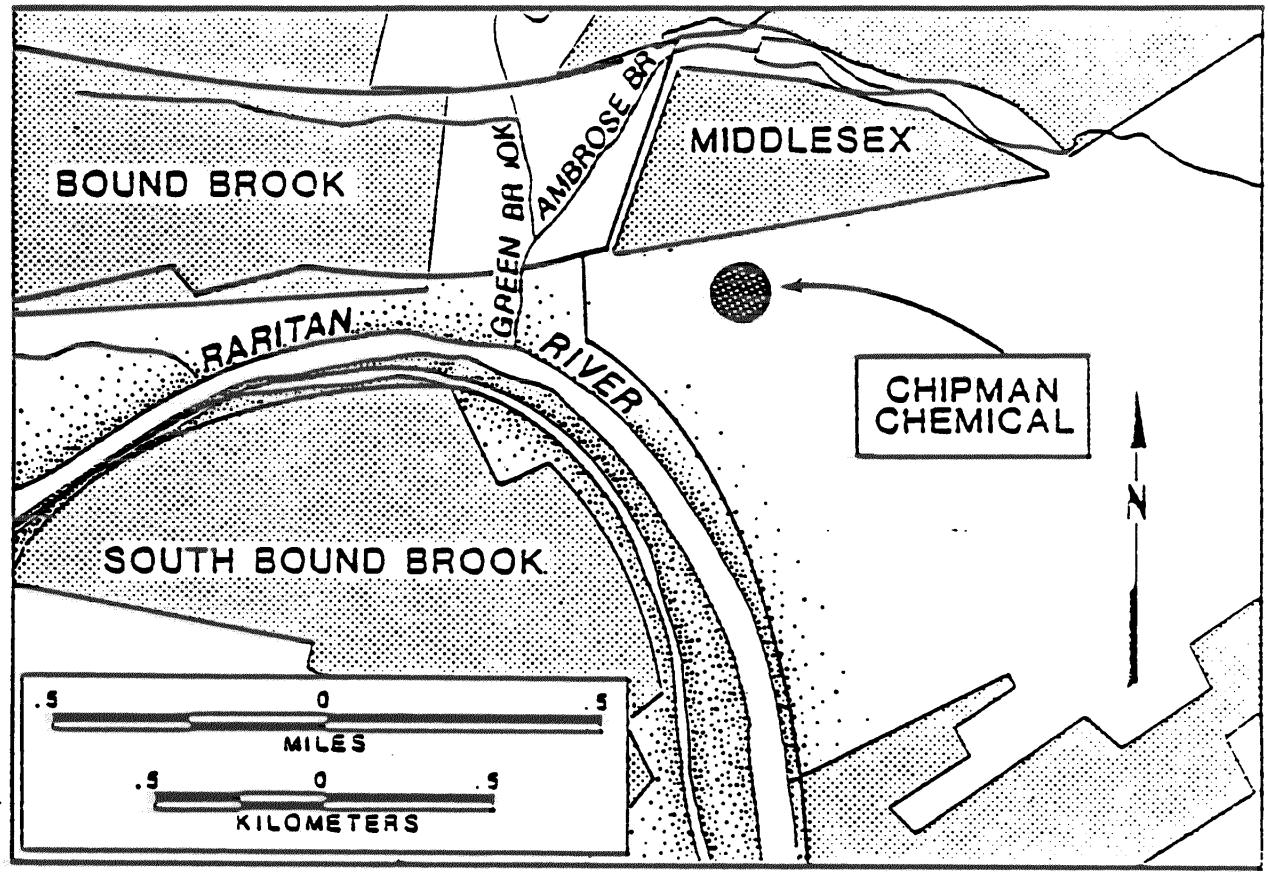
Chipman Chemical is an abandoned pesticide dump located within the boundary of an active facility presently owned by the Reagent Chemical Company, a manufacturer of sulfur products for the lubricating industry. Heavy metals, solvents, and pesticide wastes, including DDT, chlordane, arsenic, lead, copper, and mercury are partially buried on-site.

Marasol Solvent Recovery Company has been identified as a possible contributor to the contamination in this area. Other chemical and manufacturing operations in the area are believed to be responsible for contaminating the local water table. Although the State of New Jersey has dye-tested the sewer lines of these facilities, it has not been able to identify which industry or manufacturing process is responsible for the leachate stream. Chipman Chemical has been identified as the generator because the outflow pipe which is discharging the contaminated leachate into the Raritan River is located on Chipman Chemical property.

Proximity of Chemical Hazard to Marine Resources

The site is located in a marshy area approximately 60 meters from the Raritan River. The New Jersey Department of Environmental Protection (DEP) estimated that more than 25 gallons per day of leachate had discharged into the river from the entire industrial area.

Groundwater at the site was found to contain arsenic (3 ppb), zinc (116 ppb), cadmium (8 ppb), trichloroethylene and chloroform (18 ppb total), and trimethyl benzene (118 ppb). Discharge of contaminants into the Raritan River from the Chipman Chemical site is now said to be negligible. In 1982 the sewer line was extended to the Chipman property and other sites in coordination with a groundwater pumping system which extracts chemical contaminants and then discharges into the sewer. The levels of contaminants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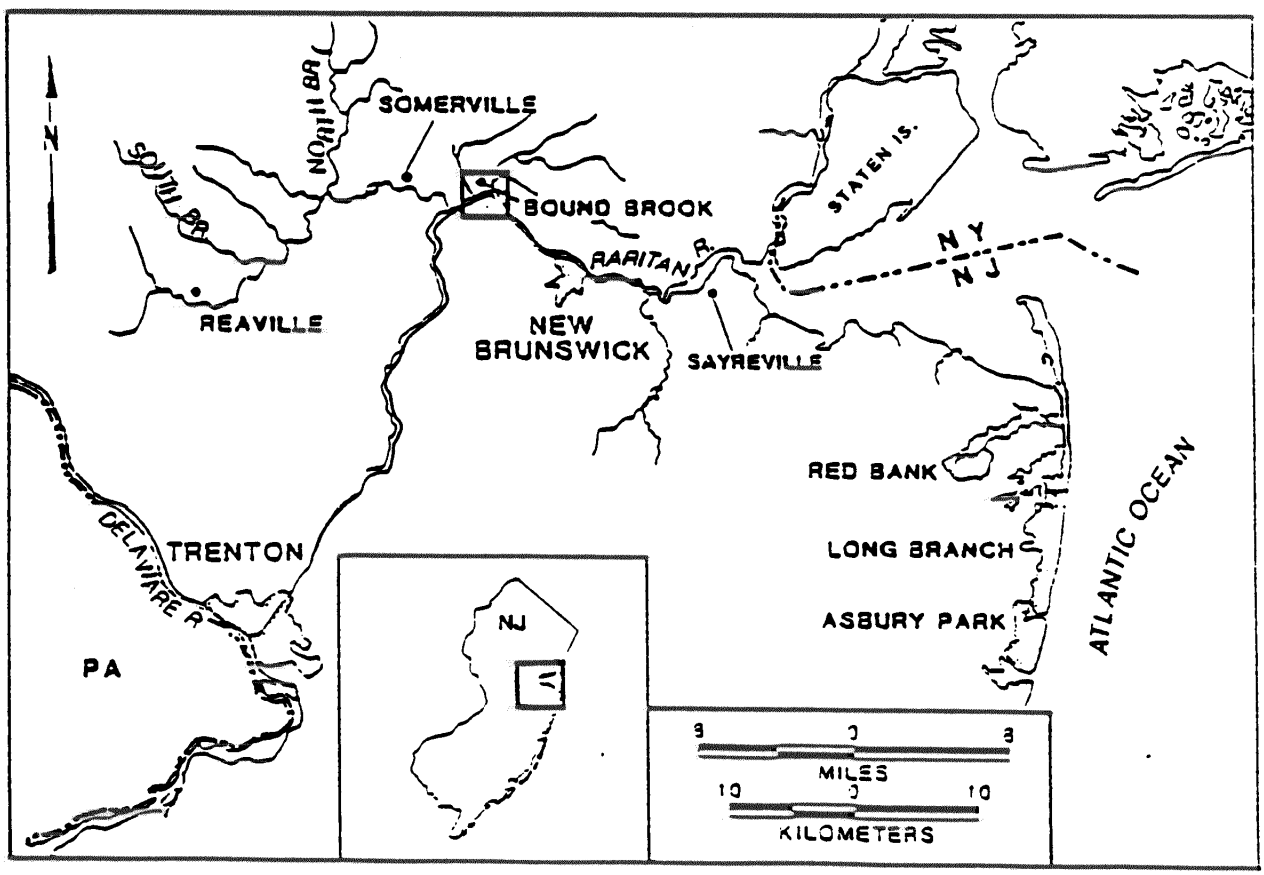
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have been dropping since this system was installed. Measurements made in 1984 had not been compiled by the State of New Jersey as of this printing but it is believed by the Middlesex County Department of Health that the levels have again been reduced.

Marine Resources at Risk

The site is located adjacent to the Raritan River approximately 15 kilometers upstream of the confluence of South River at Sayreville, New Jersey. The region of the Raritan River at Sayreville is characterized by estuarine habitats. These estuaries are important spawning and nursery grounds for numerous marine organisms.

The Raritan River in the vicinity of the site was historically a spawning area for alewife and blueback herring, and at one time was also a striped bass and American shad spawning area. Today, this section of the river is marginally important as a recreational resource with minimal freshwater fishing activity. Few striped bass and blueback herring are caught in the lower sections above Sayreville. Blueback herring are presently known to spawn around Sayreville, and striped bass juveniles originating from Hudson River stocks do migrate up the Raritan to Bound Brook. Some adult alewife are also present in the river up to Bound Brook but spawning has not been observed recently.

The site may pose a threat to any downstream migrations of American. shad released by the New Jersey Department of Fish, Game and Wildlife if the groundwater pumping systems are not maintained or are otherwise ineffective.

Site Chronology

1970's	Operation as an industrial dump, Chipman Chemical.
May 1982	New Jersey DEP test of the production well on site.
June 1982	Sewer line extended to Chipman property to collect groundwater discharge.
Feb. 1983	Chipman hires contractor to develop a work plan.
1985	Expected approval of the work plan.

NOAA Reviewer: Gary Ott, SSC NOAA Hazardous Materials Response Branch
State Contact: Maurice Bulris, Project Officer

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De Rewal Chemical Company (II-119)
Frenchtown, New Jersey
30 June 1985

Location and Nature of Site

De Rewal Chemical Company is situated on a 1.4 acre lot in an industrial section of undeveloped rural land adjacent to the Delaware River. From 1973 to 1976 De Rewal received wastes containing chromium and copper for disposal at the site. The chromium wastes were moved by the owner from the original disposal areas and dumped at nearby previously uncontaminated locations, including a railroad bed. Materials at these locations are leaching into groundwater and entering the Delaware River as surface water runoff. The groundwater is a source of potable water for the area. The site is now a private residence.

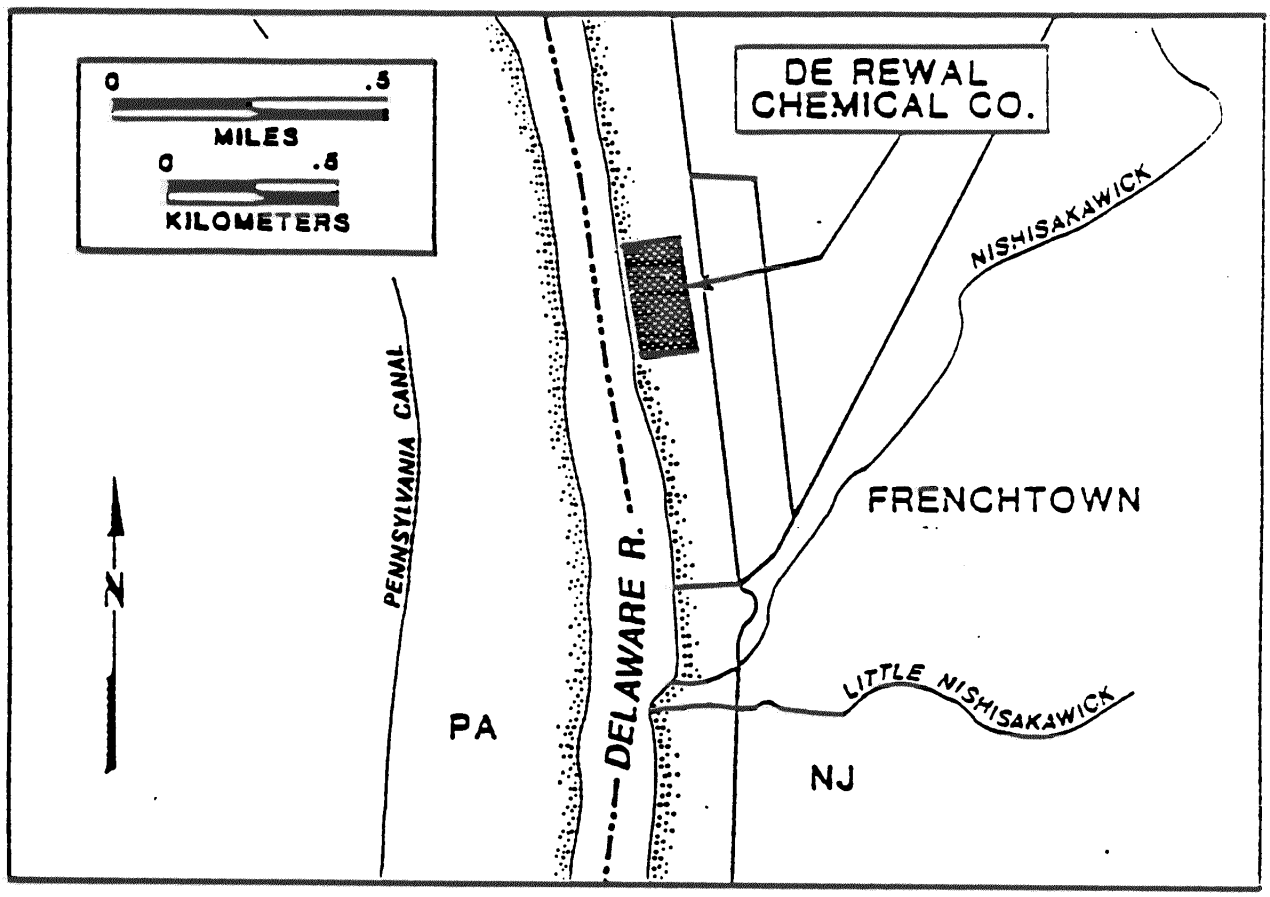
Chemical Hazards

Proximity to Marine Waters

Storm water runoff from the chromium waste at the site flows (as a green-colored liquid waste) into the Delaware River, which lies about 46 meters to the west. The site is also located on a flood plain of the river. Contaminated shallow groundwater may be reaching the river.

Contaminants and Concentrations

The groundwater and some of the soil at the De Rewal Chemical site are contaminated with copper and chromium. The levels of contamination have not been documented. The State of New Jersey conducted a sampling program in April 1985 to determine the level of contamination on site, with some limited study of the river. Results are pending completion of the sample analysis by EPA.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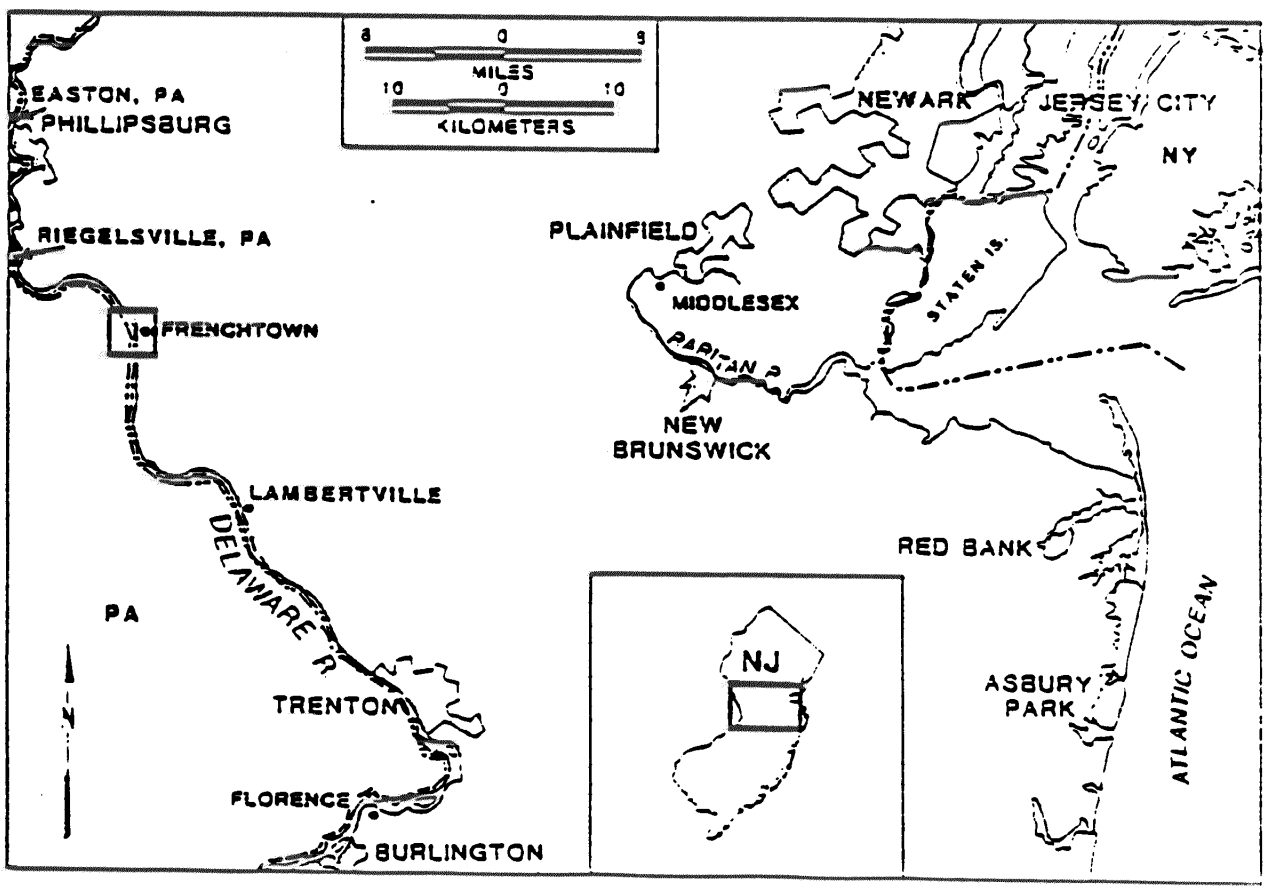
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Physical Extent of Contamination

The soils on the site are generally contaminated, with higher concentrations around old buildings and the loading areas. The owner extended the area of contamination by filling areas along the railroad bed, and possibly other areas, with contaminated soils. The extent of contamination off the site in the Delaware River and its habitats is not known.

Duration of Contaminant Release

Initial State of New Jersey investigations noted contamination and discharge from the facility into the Delaware River since at least 1974. Storm water runoff from the chromium waste at the site regularly flows into the Delaware River.

Marine Resources

Resources at Risk

The site is located approximately 50 kilometers upstream of the inland-most extent of tidal influence at Trenton, New Jersey. American shad ascend the Delaware River to the first major dam on the East Branch of the Delaware River in New York. Shad spawn predominantly in tributaries from Easton, Pennsylvania to the East Branch dam in New York. Occasionally, shad eggs and fry are found at Point Pleasant, Pennsylvania, about 20 kilometers upstream of Frenchtown. Young-of-the-year shad are found during the spring from the East Branch dam to Trenton.

The Delaware River Fish and Wildlife Management Council is implementing a management plan for American shad. A goal of 500,000 adult shad spawners annually running in the river was achieved in 1984 and 1985. Future runs are expected to exceed 1,000,000 adults. The Delaware Bay shad fishery depends in part on recruitment of stocks from downstream migrations of post-spawning adults and from juvenile shad. Restoration of shad migration to tributaries is now in progress.

Spawning has been successfully established in the Lehigh River, upstream of Frenchtown, through introduction of adult fish. Installation of passage devices is planned at two dams to re-establish spawning runs. Restoration efforts are currently in progress on the Schuylkill River at Philadelphia downstream of Trenton.

Both alewife and blueback herring are known to spawn in the non-tidal reaches of the Delaware River up to Riegelsville, Pennsylvania, upstream of Frenchtown. Spawning does occur in the vicinity of Frenchtown near the site.

As a result of environmental water quality management efforts, the area of the Delaware River ranging from above Philadelphia to the New York State border has showed a marked improvement in fish habitat. A multi-million dollar sportfishery is based the population centers of Philadelphia, Trenton, and other local communities along the river. The exact number of fishermen using the river is unknown.

Sportfishing is popular in the Delaware River in the vicinity of the Frenchtown site. In addition to striped bass, catfish and walleye are taken. One commercial fishing enterprise operates at Lambertville, New Jersey, 30 kilometers downstream of Frenchtown. The catch is comprised 95% of American shad , 5% of both blueback herring and alewife, and occasional shortnose sturgeon. Striped bass spawn in the vicinity of Trenton, but only adult fish are observed from Trenton to Riegelsville, Pennsylvania. Adults are taken by sport fishermen in this section of the river.

Discharge from the site may pose a small threat to the early life stages of the marine resources found in the Delaware River near Frenchtown. The region of most concern probably will not extend more than 1.6 kilometers downstream from the point of discharge due to mixing and dilution. The threat to the fishery resource will be highest during periods of low river flow.

The threat to shad eggs is of no concern since hatching occurs many kilometers above the site. Blueback herring and alewife eggs laid on the Frenchtown side of the river are threatened by the site. Juveniles of shad, alewife, and blueback herring using the section of the river from Frenchtown to Lambertville may be threatened by discharges of copper and chromium.

Ability to Document Injury or Loss

To date, there has been no documentation of any adverse effects upon the indigenous fish and wildlife populations of the area as a result of toxic discharges originating from the site.

The sample values for chromium and copper taken at Trenton may be slightly above historic, natural ambient levels. The U.S. Geological Survey has sampled chromium and copper since 1979. Insufficient evidence exists for determining ambient levels for the Delaware River at Trenton. The possibility exists that the source of chromium and copper found in the samples originated from De Rewal.

Feasibility of Habitat or Resource Restoration

Soil contaminants (chromium, copper) are leaching into the Delaware River with surface water runoff. Groundwater within the site is contaminated. The total extent of contamination has not been evaluated. To will establish the extent of chromium and copper in the Delaware River

attributable to the De Rewal site water samples should be taken upstream of the discharge point, a downstream transect along the New Jersey side of the river, and a cross-river transect about 500 meters downstream of the discharge. Samples should be made during a five-year rainfall event and also during a period of low flow.

Site-Related Actions

Summary of EPA/State Response Actions

EPA has signed a cooperative agreement with the State of New Jersey for carrying out remedial actions. Execution of this agreement is anticipated in summer 1985. No removal or remedial actions have occurred to date.

Present Stage of EPA Action at the Site

The New Jersey Division of Geological Survey has recommended that a soil and groundwater sampling program be conducted to assess the present impact of this site on land and water resources. The work plan for the site was scheduled for completion in late May 1985. The RI/FS and RAMP will follow. The New Jersey Division of Geological Survey has also recommended that groundwater monitoring wells be installed.

The De Rewal site is ranked by New Jersey as 78th in priority of sites on the NPL.

Responsible Parties with Adequate Means Identified

The Potentially Responsible Parties (PRP's) have been identified, and EPA expects to use Superfund Enforcement funds for action against the parent company.

Interest of Co-Trustees in Damage Assessment Investigations

The U.S. Department of Interior has not yet evaluated the threat posed by this site to trustee resources. The Site Manager for the State of New Jersey knows of no efforts by his department to seek compensation for natural resources damages resulting from chemical contamination from this site.

Site Chronology

1972 New Jersey Department of Environmental Protection (DEP) Water Resources conducted soil sampling showing high levels of copper, nickel, cyanide, and hexavalent chromium.

March 1973	De Rewal notified by New Jersey DEP that permits would be required to continue operations.
1973	Series of correspondence from Kingwood Environmental Commission, a Township Committee, reporting to New Jersey DEP problems with De Rewal dumping activities.
Jan. 1973	New Jersey DEP signs a consent order with De Rewal agreeing to soil and groundwater sampling.
Dec. 1975	New Jersey DEP conducts sampling of mud and pooled water. High levels of chromium detected.
June 1978	Malford De Rewal convicted of improper dumping of hazardous waste in Pennsylvania and sentenced to six months by State of Pennsylvania.
1978	Mr. Soums buys the property from De Rewal. Report of 20 drums on roof labeled "acrylic acid".
1983	New Jersey DEP test of potable water in site well. Level of chromium measured at 5 ppb (drinking water standard is 50 ppb).
July 1983	Mr. Soums removes 30 tons of soil from the site. Soil taken to the Frenchtown Roller Rink.
April 1984	New Jersey DEP conducts site visit and proposes soil testing plan.
March 1985	New Jersey DEP proposes sampling plan.
April 1985	New Jersey DEP accomplishes sampling plan.

NOAA Reviewer: Gary Ott, SSC NOAA Hazardous Materials Response Branch
EPA Contact: Alberto Barrera
New Jersey Sites Investigation & Compliance Section
State Contact: Jerry Hartig, Site Manager, New Jersey DEP
Division of Waste Management, Hazardous Site Mitigation

References

Barnsworth, John, 1985. Personal Communication. New Jersey Division of Geological Survey.

Basso, Ray, 1985. Personal Communication. U.S. Environmental Protection Agency Region II.

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Hazardous Ranking System Report (HRS), 1983. U.S. Environmental Protection Agency Region II.
Lumpime, Art, 1985. Personal Communication. New Jersey Department of Fish, Game and Wildlife Rosemont Laboratory.
Miller, Joe, 1985. Personal Communication. U.S. Fish and Wildlife Service.
Vernam, John, 1985. Personal Communication. New Jersey Department of Environmental Protection Regional Response Team Representative.

American Cyanamid (II-131)
Bound Brook, New Jersey
30 June 1985

Location and Nature of Site

American Cyanamid is an active industrial facility on a 575-acre tract of land adjacent to the Raritan River. The facility has several individual disposal sites, including a total of 26 active and inactive lagoons and inactive landfills. Approximately 800 types of chemicals, including dyes and textiles chemicals, organic pigments, rubber chemicals, pharmaceuticals, and intermediate chemicals have been produced here. At present, pharmaceuticals are the principal production items. Over the course of 50 years, American Cyanamid has buried an estimated 800,000 tons of chemical wastes at the site. The company used unlined lagoons for treatment and storage of wastewater and sludges. An incinerator was put into operation in 1979 for the disposal of newly produced sludge.

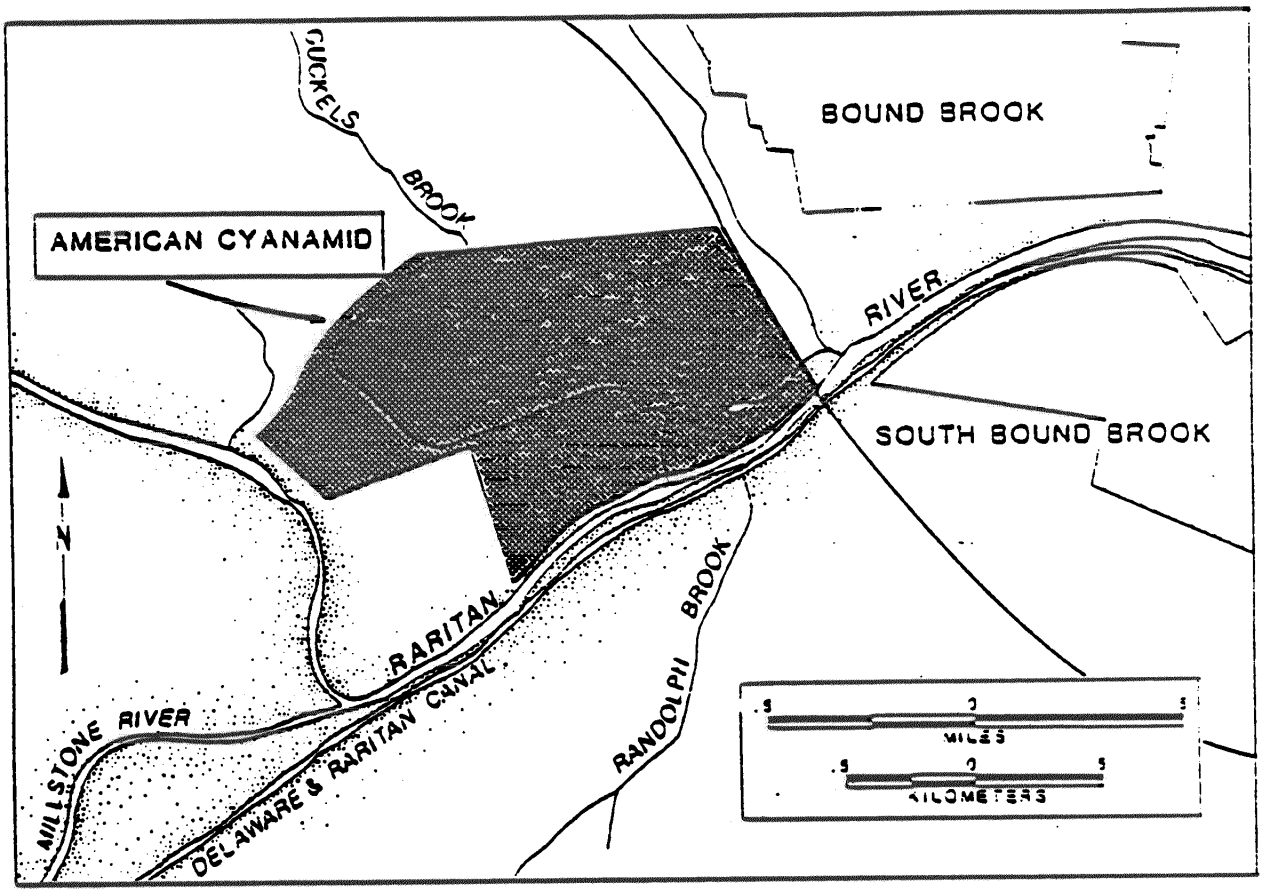
The lagoons are a potential source of ground- and surface water contamination due to percolation and mixing with storm water. The groundwater beneath the site is severely contaminated with organic chemicals. The potential spread of contamination into nearby wells and surface water is of concern, and there are at least 20 private wells in the immediate area in jeopardy. Offsite contaminant migration is currently limited by groundwater pumping.

Proximity of Chemical Hazard to Marine Resources

The New Jersey Department of Environmental Protection (DEP) sampled the Raritan River and could not demonstrate any significant migration of contaminants from the site to the river. A few contaminants in the river near the site were detected in the parts per billion (ppb) range but these may be coming from upstream.

However, inactive lagoons at American Cyanamid are located in the Raritan River flood plain and may release contaminants during extreme flood stages.

The New Jersey DEP Office of Enforcement has issued an Administrative Order to American Cyanamid. Under the terms of this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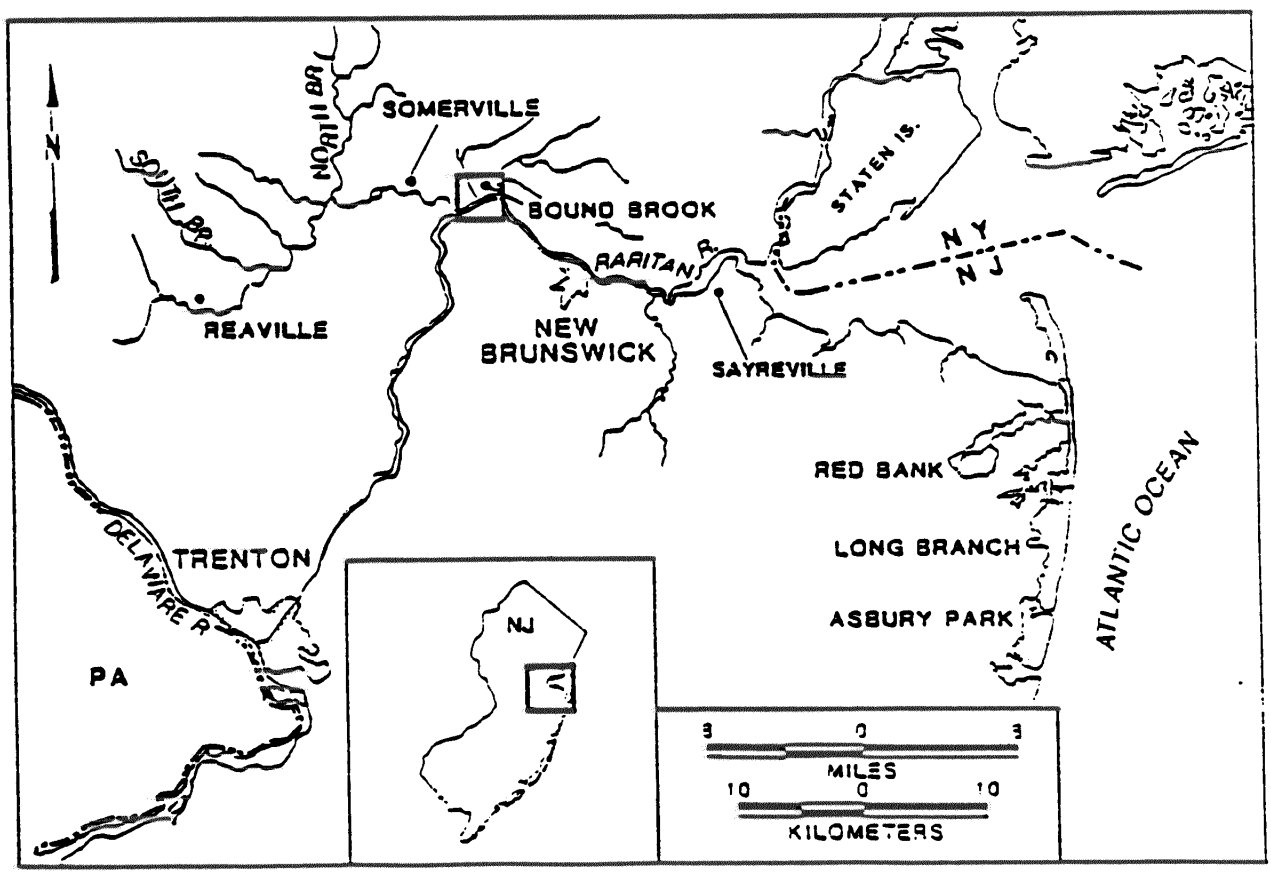
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Order, the company maintains a groundwater flow gradient toward the facility by a high rate pumping system.

Marine Resources at Risk

The site is located adjacent to the Raritan River approximately 18 kilometers upstream of the confluence of South River at Sayreville, New Jersey. The region of the Raritan River at Sayreville is characterized by estuarine habitats important as spawning and nursery grounds for numerous marine organisms. The first weir-type dam on the Raritan River is the Fieldsville Dam located approximately 6.5 kilometers upstream of New Brunswick. This dam has been breached and is not a barrier to fish migrations. The Delaware-Raritan Canal enters the Raritan River in the vicinity of New Brunswick.

The Raritan River, in the vicinity of the American Cyanamid site, has historically been a spawning area for alewife, blueback herring, striped bass, and American shad. Presently, this section of the river is marginally important as a recreational resource with little freshwater fishing activity. A few striped bass and blueback herring are caught in the lower sections of the river above Sayreville, New Jersey, and blueback herring are known to spawn above Sayreville. Striped bass juveniles originating from Hudson River stocks do migrate up the Raritan to Bound Brook. Some adult alewife are also present in the river up to Bound Brook but spawning has not been observed recently.

The New Jersey Department of Fish and Game has been conducting a restoration program for American shad in the Raritan River above Bound Brook since 1980. Adult American shad are captured in the Delaware River and transported to the north and south branches of the Raritan River for stocking. Each river branch has weir-type dams occurring intermittently. Although each dam is an obstruction to upstream migrations, fish are able to pass over these dams on downstream migrations. None of the dams currently have fish ladders. The intent of this program is to re-establish spawning runs in the river. As of 1985, there has been no evidence of shad return runs or spawning as a result of these efforts.

Site Chronology

1935	American Cyanamid begins operations at this location.
June 1979	Operation of a new on-site incinerator for newly produced sludge.
Jan. 1982	New Jersey DEP issues an Administrative Consent Order to American Cyanamid to perform a site evaluation and maintain a groundwater pumping rate that would prevent offsite contamination migration.
Sept. 1982	EPA Hazardous Ranking System Report completed.
July 1983	Report that American Cyanamid is maintaining sufficient pumping to prevent offsite migration of contamination.

NOAA Reviewer: Gary Ott, SSC NOAA Hazardous Materials Response Branch
EPA Contact: Ray Basso, Chief, New Jersey Site Investigation and Compliance Section
State Contact: Greg Cunningham, Project Officer

References

CERCLA Implemention Report, 1984. U.S. Environmental Protection Agency, Region II, Hazardous Waste Site Branch.

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Hazardous Ranking System Report (HRS), 1982. U.S. Environmental Protection Agency Region II.

Hazardous Waste Site Report, 1983. New Jersey Department of Environmental Protection.

Krysowaty Farm (II-132)
Hillsborough Township, New Jersey
30 June 1985

Location and Nature of Site

The Krysowaty Farm site is located along a ravine on a 42-acre farm in an area of mixed residential and agricultural properties, approximately 450 meters from the South Branch of the Raritan River. Various chemicals, including paint and dye waste, oils, and sludges were disposed in bulk along the ravine from 1965 to 1970. Both groundwater beneath the site and the surface water are heavily contaminated with toluene, naphthalene, trans-1,2-dichloroethylene. It is estimated that a minimum of 500 drums of waste plus unknown quantities of solvents and sludges were dumped at the site.

The Remedial Action Master Plan (RAMP) for the site was finalized in March 1983. A Record of Decision (ROD) was signed in June 1984 identifying remedial actions for the Krysowaty Farm site.

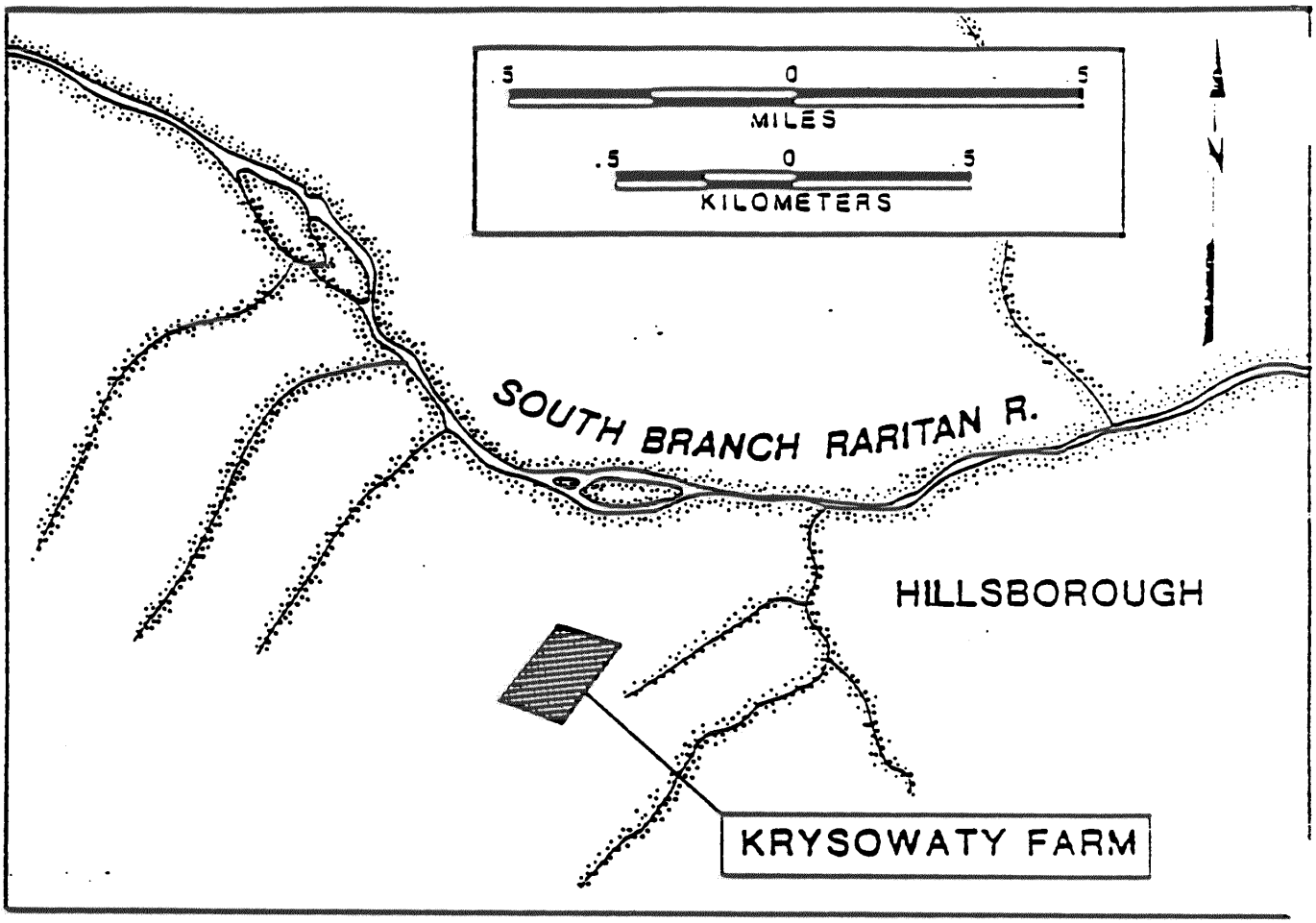
It is expected that design work for the excavation and removal portion of the project will be completed by March 1985. Removal is scheduled to begin in June 1985 and to be completed by October 1985.

Krysowaty is ranked by New Jersey as 13th in priority of sites on the NPL.

Proximity of Chemical Hazard to Marine Resources

Groundwater beneath the site contains significant levels of chemical contamination. The site is situated in a fractured rock groundwater system which makes determination of contaminant migration difficult. The surrounding residences are dependent on well water from this potable water supply. The wells may be threatened by offsite migration of the contaminants.

The pathway for chemical contamination from the site to the Raritan River is through surface and groundwater flow. EPA sampling of the stream emanating from the ravine below the dump site detected toluene,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MILES
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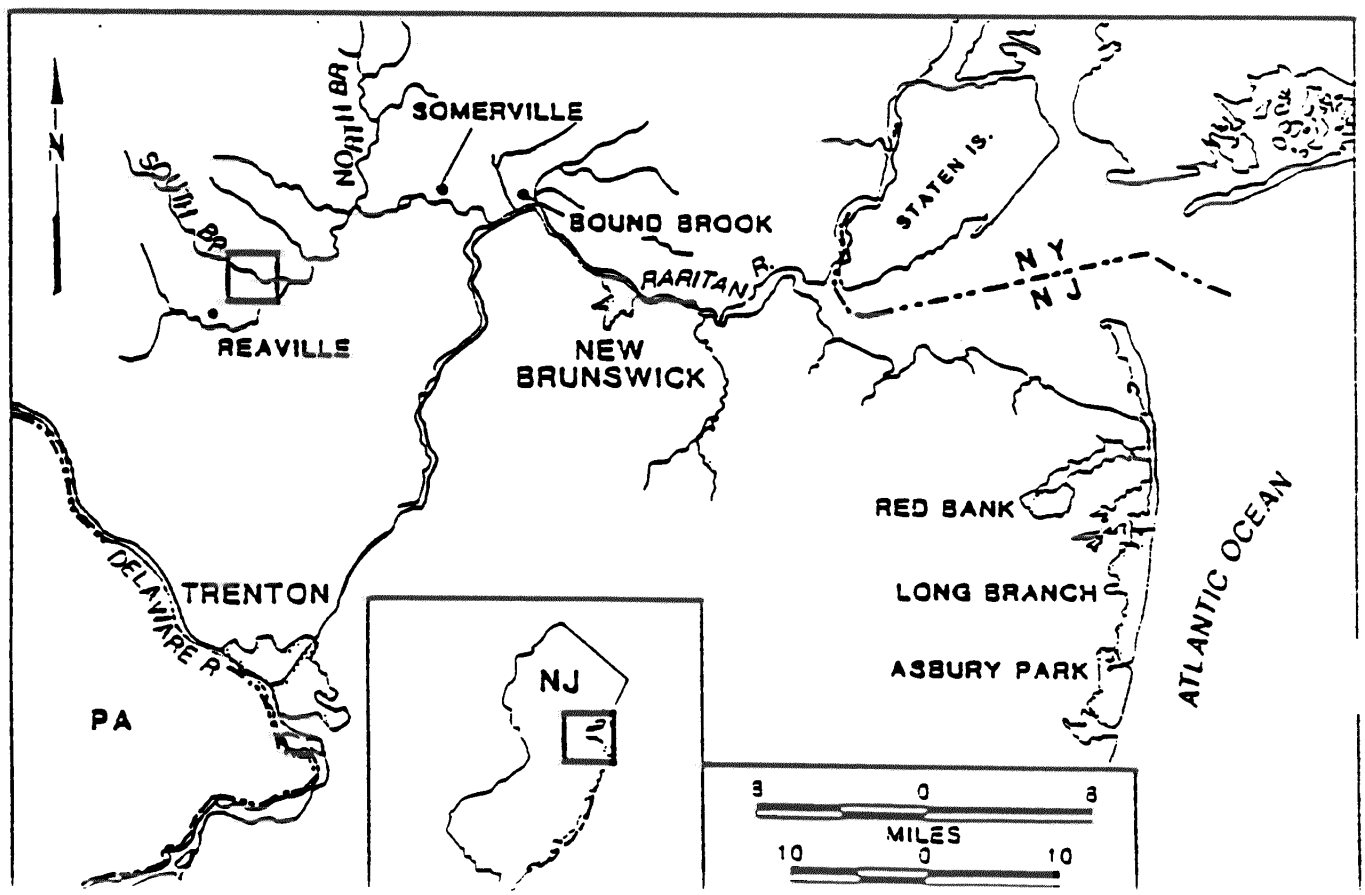
KILOMETERS
N
SOUTH BRANCH RARITAN R.
HILLSBOROUGH
KRYSOWATY FARM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SOMERVILLE
NORTH BR
SOUTH BR
BOUND BROOK
RARITAN R.
STATEN IS.
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N J
REAVILLE
NEW BRUNSWICK
RED BANK
LONG BRANCH
ASBURY PARK
ATLANTIC OCEAN
TRENTON
DELAWARE R.
PA
NJ
8 0 8
MILES
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trans-1,2-dichloroethylene, and naphthalene. These chemicals are highly volatile and relatively soluble for organic compounds, and would be somewhat persistent in the environment Sampling and analysis to determine types and levels of chemical contamination entering the Raritan River from this site has not been accomplished nor is it now planned.

Marine Resources at Risk

This waste site is located on the South Branch of the Raritan River approximately 15 kilometers upstream of the confluence of the North and South Branches of the Raritan River and 35 kilometers upstream of Calmo Dam.

The New Jersey Department of Fish & Game has been conducting a restoration program for American shad in the Raritan River above Bound Brook since 1980. Adult American shad are captured in the Delaware River and transported to the North and South Branches of the Raritan River for stocking. The intent of this program is to re-establish spawning runs in the river. As of 1985, there has been no evidence of shad return runs or spawning as a result of these efforts.

The Calmo Dam represents the first formidable barrier to upstream migrations of anadromous fish. Upstream migrations can only pass over this structure during spring flooding.

Site Chronology

1965-70	Alleged disposal of chemicals, paint, and dip waste on site.
May 1982	EPA sampling of surface water in the stream below the site.
Dec. 1982	EPA and New Jersey Department of Environmental Protection execute cooperative agreement.
March 1983	RAMP finalized.
June 1984	Record of Decision outlines cost-effective remedy
June-Oct. 1985	Removal action scheduled.

NOAA Reviewer: Gary Ott, SSC NOAA Hazardous Materials Response Branch
EPA Contact Ray Basso, Chief
New Jersey Site Investigation and Compliance Section

References

CERCLA Implementation Report, 1984. U.S. Environmental Protection Agency Region II, Hazardous Waste Site Branch.

Hazardous Waste Site Report, 1983. New Jersey Department of Environmental Protection.

Hazardous Ranking System Report, 1985. U.S. Environmental Protection Agency Region II.

Applied Environmental Services (UD#2 II-3)
Glenwood Landing, New York
30 June 1985

Location and Nature of Site

Applied Environmental Services (AES) is located in a suburban residential community on the North Shore of Long Island. The three-acre site is situated on a small hill, approximately 7.5 meters above sea level, overlooking Total Hempstead Harbor. Motts Cove is to the south and a fuel oil distributor is to the north. The property east of the site is owned by a country club.

Shore Realty Company acquired title to the site in 1983 and later took possession of the land, forcing AES to vacate the premises. Shore Realty maintains that waste material has been leaking from storage containers on the property since the company took possession on January 5, 1984.

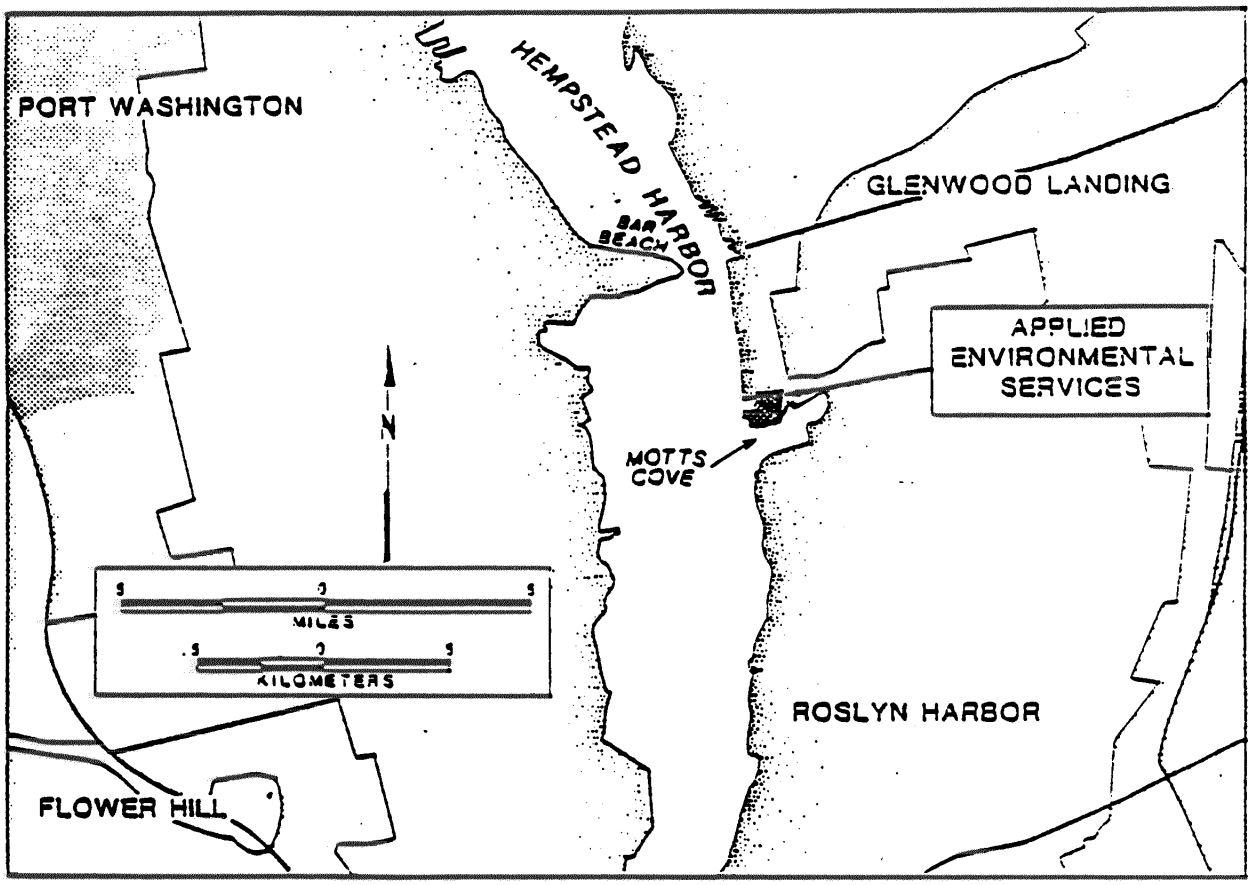
The site had been used by numerous petrochemical operators since 1939; AES operated a hazardous waste facility on the site between 1980 and 1983. Two one-story buildings, seven underground tanks, and 11 above-ground tanks remain on the site. One of the prior owners, Mattiase Petrochemicals, was responsible for several spills of petrochemicals and organic chemicals into Motts Cove, including 3,000 gallons of toluene in 1978.

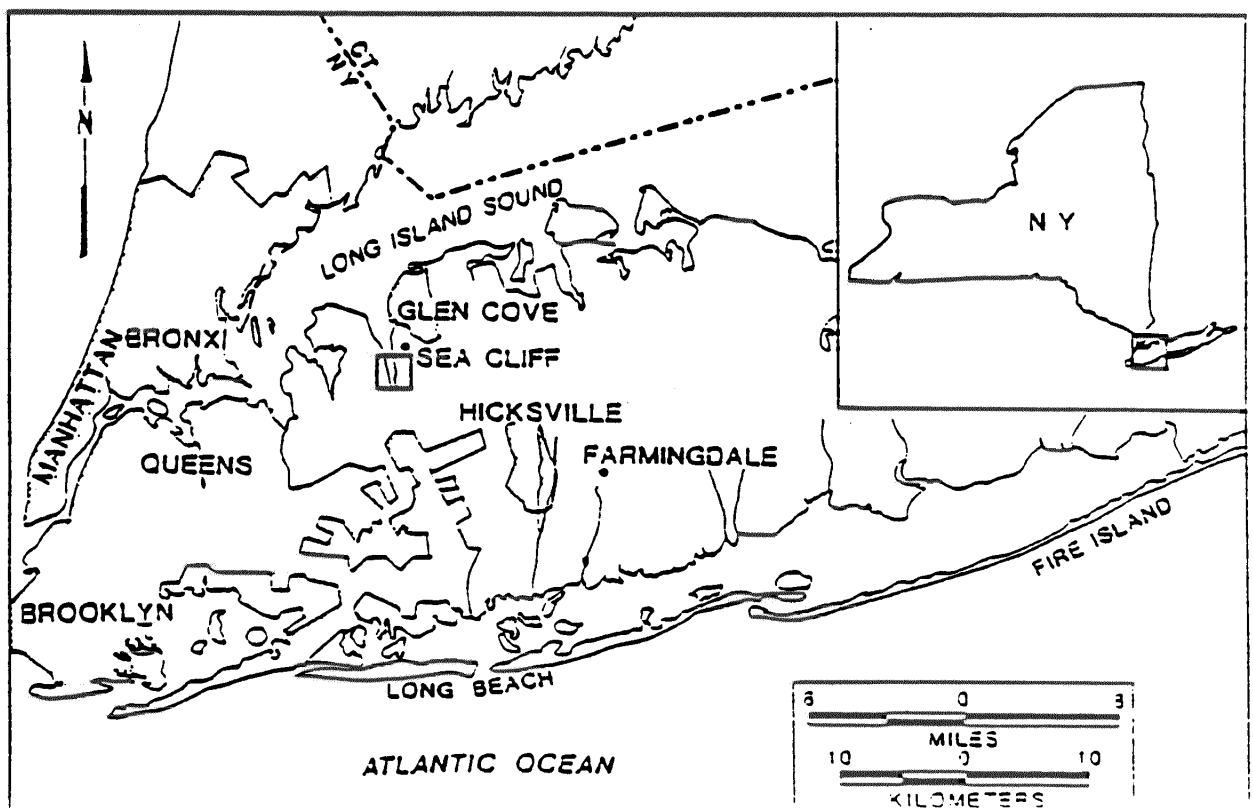
Chemical Hazards

Proximity to Marine Waters

The AES site is adjacent to wetlands in Motts Cove and Hempstead Harbor. In addition to spills, surface water runoff and groundwater flow may be causing contamination of Motts Cove.

Motts Cove is a narrow, partially bulkheaded cove approximately 600 meters in length with a mouth 200 meters wide. The cove is connected to Hempstead Harbor near the inland half of the harbor, which is nearly separated by a point of land, Bar Beach, jutting out from the west, constricting the channel to a width of about 300 meters. This constriction


PORT WASHINGTON
HEMPSTEAD HARBOR
BAR BEACH
GLENWOOD LANDING
APPLIED ENVIRONMENTAL SERVICES
MOTTS COVE
N
MILES
KILOMETERS
ROSLYN HARBOR
FLOWER HILL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LONG ISLAND SOUND
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BRONX
SEA CLIFF
MANHATTAN
HICKSVILLE
QUEENS
FARMINGDALE
FIRE ISLAND
BROOKLYN
LONG BEACH
ATLANTIC OCEAN
MILES
KILOMETERS

reduces the rate and volume of tidal flushing in the inland half of Hempstead Harbor and Motts Cove. An electric power plant is known to discharge waste-heat waters on the Sound side of Hempstead Harbor directly opposite of Bar Beach.

The geomorphological and hydrologic features of the inland half of Hempstead Harbor are conducive to entrainment of dissolved materials. Restricted tidal flushing and the absence of any freshwater tributaries to the harbor area indicate the probability of long residence times of polluted waters entering the inland half of the harbor.

Contaminants and Concentrations

A preliminary EPA assessment revealed contamination by toluene (300,000 ppm), xylene (300,000 ppm), and trichloroethylene (100,000 ppm), as well as the presence of other liquid chemical wastes on the site. The New York Attorney General's Office reports that groundwater near the site has been found to contain toluene (300,000 ppb), xylene (50,000 ppb), and benzene (650,000 ppb).

Physical Extent of Contamination

AES accepted many types of hazardous waste, including waste oil, finished fuel product, chlorinated organic solvents, acids, paints, chloroform, sludges, ethylbenzene, methylene chloride, benzene, toluene, freon, heavy metals, and a variety of other organic chemical compounds. It is estimated that 700,000 gallons of hazardous wastes remain in bulk tanks on the site.

One warehouse on the facility contains between 400 and 500 drums, many of which are rusted. Approximately 100 of these drums were labelled "waste flammable solid". The contents of these drums were reported to be waste solvents mixed with soil.

The extent of contamination in Motts Cove and Hempstead Harbor is not known. No studies have evaluated the impact of contamination from AES in Motts Cove, Hempstead Harbor, nor are such studies scheduled.

Duration of Contaminant Release

The bulk tanks on site are suspected of leaking, as evidenced by soil and groundwater contamination. Due to the volatile characteristics of the materials in the tanks, spills tend to vaporize rapidly. However, the leaking tanks and a continuous release of chemicals into the harbor may cause contamination of Motts Cove until cleanup is completed.

In March 1984, the State of New York sampled surface water approximately one-half meter from shore and detected heavy metals, solvents, and other contaminants. An absorbent boom was placed at the bulkhead which remained in place as of March 1985 to restrict contaminant migration. A contractor for the owner of the site has since sampled the

surface water approximately 30 meters from shore and found no contaminants in those samples.

Marine Resources

Resources at Risk

The anadromous fish present in Long Island Sound vulnerable to impact from the site include the Atlantic sturgeon, American shad, alewife, blueback herring, and striped bass. Flounder, tautog, bluefish, black seabass, weakfish, scup, and cunner are also found in the Sound.

Raptors, including osprey, are present in the vicinity of Hempstead Harbor. Geese, dabbling ducks, and diving ducks overwinter specifically in the inland half of Hempstead Harbor. A total bird count by the New York Department of Environmental Conservation (DEC) noted 500 birds of various species overwintering in this area of the harbor. Spartina sp. vegetates the shoreline at the mouth of the harbor.

The diamond back terrapin turtle is present in the dune area of Hempstead Harbor at Prospect Point, fronting the Sound. Prickly pear cactus, a state-protected plant, is also found in this dune area.

Potential Reduction in Resource Use

Hempstead Harbor has an actively reproducing clam and oyster population. Currently, human utilization of these beds is restricted by the State of New York. Clams and oysters from the Hempstead Harbor area are harvested and then transplanted to clean water areas for depuration, required because of the harbor water's high coliform count. However, the restrictions on shellfish harvesting are not a result of chemical contamination of harbor waters. The possibility that chemical contamination of shellfish resources in the harbor area has occurred has not been evaluated.

The proximity of surface water discharge and the presence of halogenated solvents pose a threat to wildlife, fish, and shellfish. Since shellfish are consumed directly by humans, there is a potential hazard to human health. This threat could extend past the state-required depuration process for clams and oysters harvested in the Hempstead Harbor area.

Ability to Document Injury or Loss

The results of state analyses and consultant reports clearly indicate that contamination of Motts Cove, and therfore contamination of Hempstead Harbor waters, is directly attributable to toxic chemicals present at the AES site. The physical and biological extent of contamination within the harbor area has not been determined.

The specific chemical toxicity of benzene, toluene, and xylene to crustacean larvae is well established. Adult clams and oysters have an established bioaccumulation factor of 10-15 times the water concentration for most volatile organic chemicals. Depuration of volatiles will occur if animals are transferred to clean waters. However, depuration occurs slowly and may require months to reach safe levels.

The possibility exists of contaminants emanating from the site reducing the spawning activity and larval recruitment success of shellfish in the harbor area. This effect will also extend to the other invertebrate populations within the harbor damaging the food chain.

Feasibility of Habitat or Resource Restoration

The majority of the contaminants at the site are volatile organic compounds. The threat to the ecosystem will persist until cleanup is completed. Once the leaking tanks are eliminated and the groundwater is purged of contaminants the aquatic community should return to pre-spill quality levels within two years.

Site-Related Actions

Summary of EPA/State Response Actions

The Nassau County Department of Health (NCDH) conducted a soil and groundwater analysis in September 1980. The results indicated the presence of xylene, toluene, benzene, and aliphatic hydrocarbons, in additon to other organic compounds. In June 1981, NCDH performed analyses on water collected from the creek outfall in which minimal concentrations of volatiles were detected. In February 1982, NCDH sampled and analyzed groundwater from several wells in which the principal contaminants identified included xylene, ethylbenzene, toluene, and 1,1 dichloroethane.

Several recent site inspections have been made by New York DEC and EPA, during which leaking barrels, tanks of solvents, and a hydrocarbon sheen in the cove were observed. A fire marshall also inspected the site on February 15, 1984, and said it presented a significant threat. New York DEC plans a Phase II study and has recently completed additional site sampling.

Present Stage of EPA Action at the Site

The New York Attorney General's Office has the lead on this site. On October 30, 1984, the State of New York issued an order to Shore Realty and Donald Leogrande, owners, to clean up the site. The defendants had hired a contractor who removed 275 drums. However, 150 drums and 700,000 gallons of hazardous waste still remain at the site.

New York DEC and EPA have not scheduled initiation of a Remedial Action Master Plan (RAMP) or Remedial Investigation/Feasibility Study (RI/FS).

In March 1985, a New York Attorney General's Office representative said that the defendants reported that they had contracted with another contractor to clean up the site beginning April 15, 1985. (No action was reported as of May 1985). In spite of this promise, the Federal District Court has moved to hold the defendants in contempt of the original Order to clean up the site.

Responsible Parties with Adequate Means Identified

EPA and the State of New York have identified potentially responsible parties and are negotiating with the owners to clean up the site. Details regarding enforcement investigation or litigation regarding the responsible parties, other than noted above, are not available.

Interest of co-Trustees in Damage Assessment Investigations:

DOI has not reviewed the possibility of natural resource damages resulting from the AES site. The Site Manager for EPA knows of no efforts by the State of New York to seek compensation for natural resources damages resulting from chemical contamination from this site.

Site Chronology

1939	Use of the site by a series of petrochemical operators.
1970's	Facility operated by Mattice Petrochemical.
Oct. 1978	Trailer containing 3,000 gallons of toluene overturns.
1979	Installation of slit trench to collect toluene.
1980	Installation of a recovery pump system.
Sept.1980	Nassau County DOH sample and analysis indicates soil contamination.
Oct.1980	Purchase of property by Joseph Saleh and A. Bartur.
Nov.1980	Operation of facility by AES.
Sept.1981	New York DEC analysis of soil and groundwater indicates volatile organic contamination.
Feb.1982	New York DEC analysis of groundwater indicates contamination with halogenated hydrocarbons and volatile, nonhalogenated hydrocarbons.
May 1983	EPA Preliminary Report indicates trench recovery system still in operation. Cleanup of leaching pools not completed.
Jan.1984	Shore Realty, current owner, evicts AES.
Oct. 1984	State of New York orders owners to proceed with cleanup.

NOAA Reviewer: Gary Ott, NOAA Hazardous Materials Response Branch
State Contact: Gordon Johnson, Assistant Attorney General
EPA Contact: Mel Hauptman, Project Officer

References

Hazard Ranking Score Report (HRS), 1983. U.S. Environmental Protection Agency.

Johnson, Gordon, 1985. Personal Communication. New York Attorney General's Office.

Phase I - Preliminary Report, 1983. Woodward-Clyde Consultants, Inc.

Poole, Mr., 1985. Personal Communication. New York Department of Environmental Conservation Finfish Division.

Swift, Bryan, 1985. Personal Communication. New York Department of Environmental Conservation Coastal Habitat Assessment.

Van Volkenburgh, Peter, 1985. Personal Communication. New York Department of Environmental Conservation Shellfish Division.

Liberty Industrial Finishing (UD#2 II-12)
Farmingdale, New York
30 June 1985

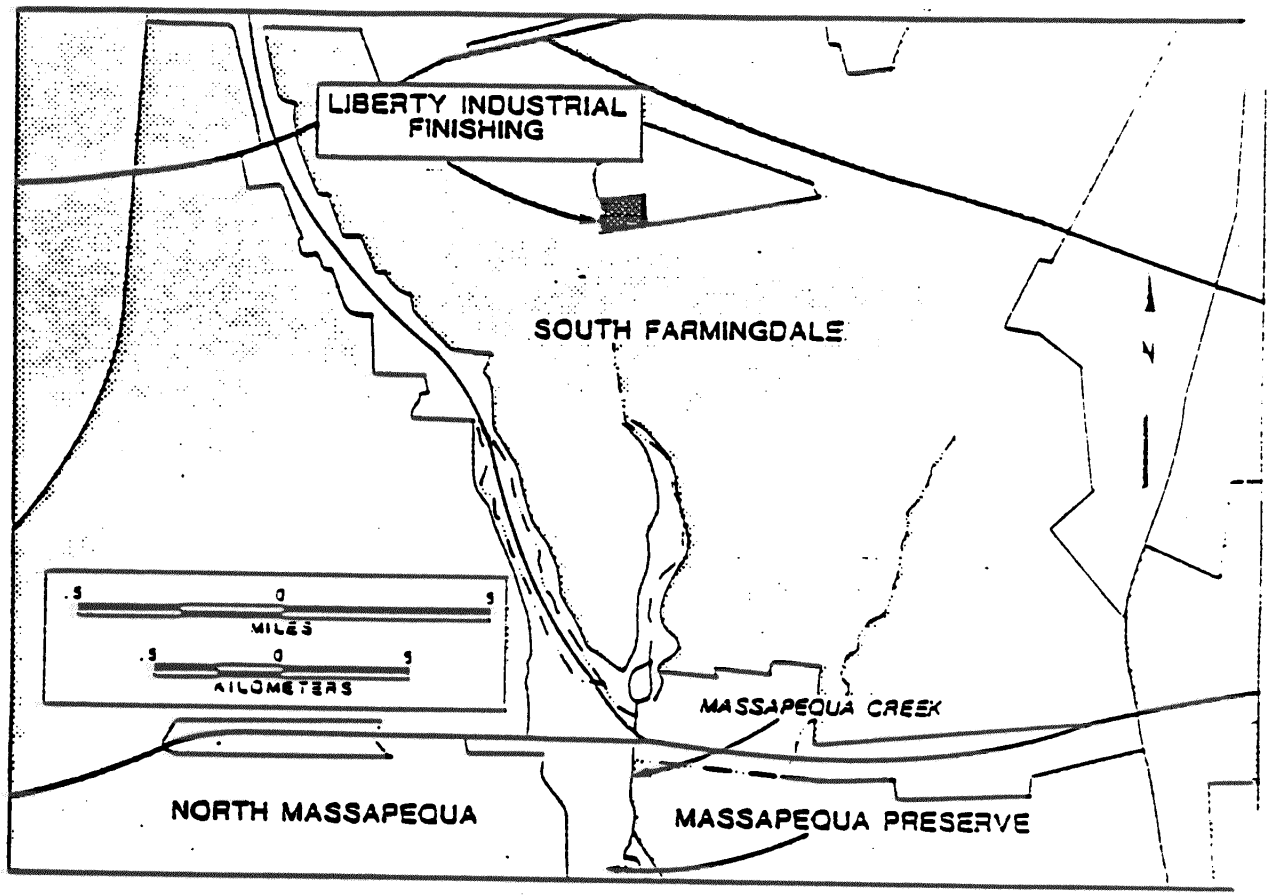
Location and Nature of Site

Liberty Industrial Finishing is located in a flat industrial area of suburban Farmingdale. The site was previously used as an electroplating, anodizing, and painting facility. There are three buildings located on the site containing a total of three acid vats, a finishing vat, three exterior sumps, and a storm water retention basin. Additionally, there are four above-ground concrete tanks and eight interior concrete-lined sumps, two deep lagoons, and numerous 55-gallon drums on the site. This site is currently used by a fiberglass extruder.

A search for responsible parties by the State of New York has identified two potential responsible parties who have been requested by the State to conduct an evaluation study to assess underground, surface, and air pollution problems at the site. Government enforcement and litigation actions are complicated by current sponsorship of the site by the Economic Development Organization known as Liberty Industrial Park.

Proximity of Chemical Hazard to Marine Resources

Liberty Industrial is less than 1.6 kilometers north of Bethpage State Park, and less than two kilometers south of the Massapequa Preserve. The Massapequa Creek leads into the Great South Bay of the Long Island Shore. which is approximately eight kilometers due south of the site. Chromium and cadmium in the catch, settling, and recharge basins on-site contaminate surface water draining from the site. These contaminants have been found in the adjacent Massapequa Creek. Groundwater and soil on the site are contaminated with heavy metals (cadmium, chromium, nickel, zinc, and cyanide), and it is estimated that there are ten tons of hazardous wastes on the site, including the contaminated soil.


LIBERTY INDUSTRIAL FINISHING
SOUTH FARMINGDALE
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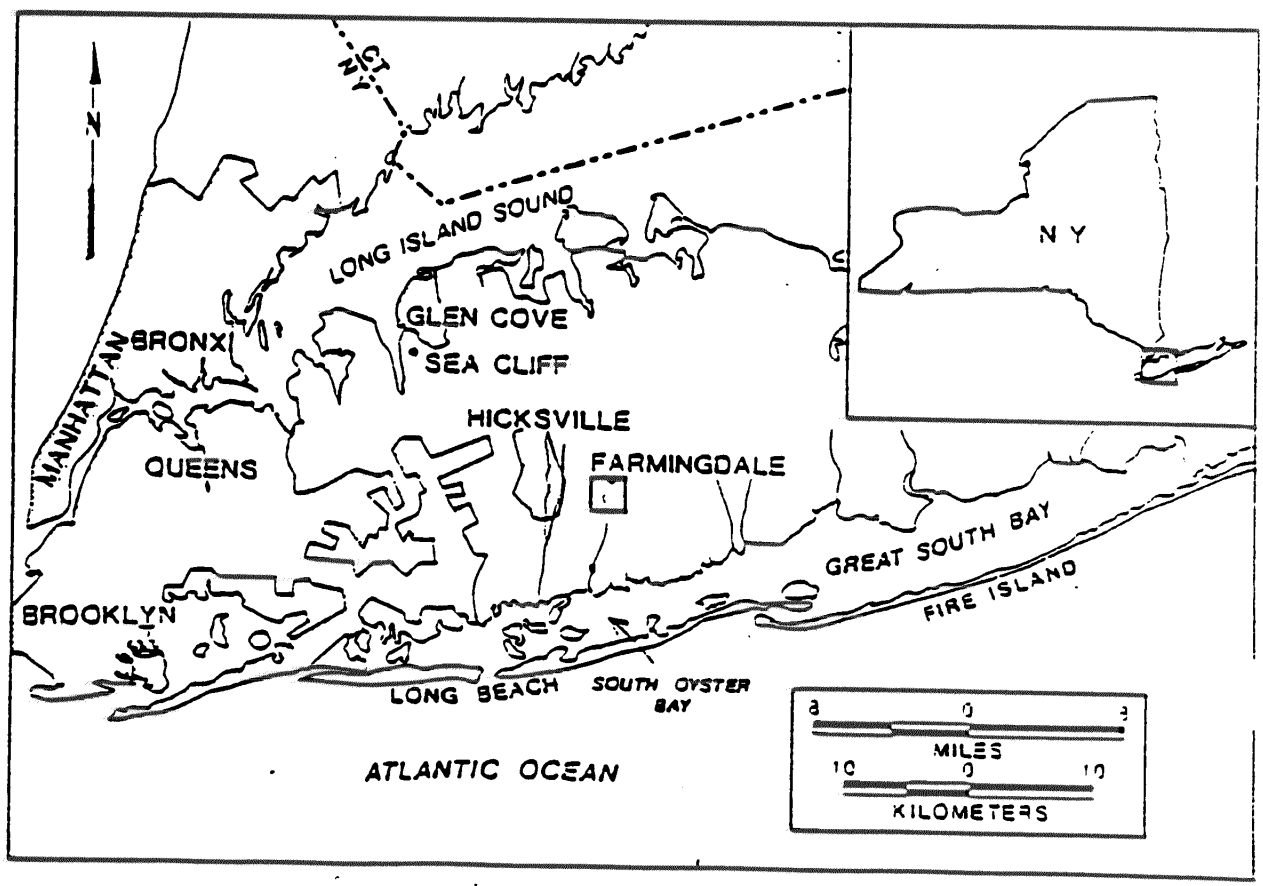
MASSAPEQUA CREEK
NORTH MASSAPEQUA
MASSAPEQUA PRESERVE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LONG ISLAND SOUND
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GLEN COVE
SEA CLIFF
BRONX
MANHATTAN
HICKSVILLE
QUEENS
FARMINGDALE
GREAT SOUTH BAY
FIRE ISLAND
BROOKLYN
LONG BEACH
SOUTH OYSTER BAY
ATLANTIC OCEAN
8 0 8
MILES
10 0 10
KILOMETERS

Marine Resources at Risk

The site is located within the Massapequa Creek watershed. Bethpage State Park, near the site, is at the headwaters of the Massapequa Creek. From Bethpage State Park, the creek flows south into the Massapequa State Park area, currently an "open-space" area. The marine waters of South Oyster Bay and Great South Bay are important recreational resources to local inhabitants, who are provided day use of the park area; children often swim in the ponds along Massapequa Creek. A variety of fish are found in the creek waters but the creek is not an important marine fishery habitat.

Massapequa Creek discharges directly to South Oyster Bay, which was closed to shellfish harvesting prior to 1980. Shellfish can be transplanted to clean waters for purification and subsequent human consumption. Hard clams and blue crabs are found throughout South Oyster Bay.

The marine fish present in South Oyster Bay threatened by the Liberty Industrial site include striped bass, flounder, tautog, bluefish, black seabass, weakfish, scup, Atlantic herring, and Atlantic menhaden.

The common tern is known to nest on the islands adjacent to Wansers Island in South Oyster Bay, approximately four kilometers from the mouth of Massapequa Creek. Numerous species of shorebirds and waterfowl are found in the vicinity of South Oyster Bay during fall, winter, and spring months.

Site Chronology

1948-77	Continuous operation of Liberty Industrial Finishing.
1978	New York Department of Environmental Conservation (DEC) finds Liberty Industrial in violation of permitted discharge limits.
Aug. 1978	Liberty Industrial moves to Suffolk County.
Sept.1978	Liberty Industrial signs a consent agreement with New York DEC to perform site cleanup.
June 1983	EPA Hazardous Ranking System Report.
Sept. 1983	Preliminary Report by Woodward-Clyde.
April 1985	Owners of Liberty Industrial sign consent agreement with New York State to perform site cleanup and environmental evaluation studies.

NOAA Reviewer: Gary Ott, SSC Hazardous Materials Response Branch
EPA Contact: Vince Pitruzzello, Chief, Enforcement Branch

References

Evans, Jim, 1985. Personal Communication. Director, Bethpage State Park.

Hazardous Ranking System Report (HRS), 1983. U.S. Environmental Protection Agency Region II.

Phase One - Preliminary Report, 1983. Woodward-Clyde Consultants, Inc.

Poole, John, Dave Fallon, Frank Panek, and Kenneth Koetzner, 1985. Personal Communications. New York State Department of Environmental Conservation Finfish Division.

Swift, Bryan, 1985. Personal Communication. New York Department of Environmental Conservation Coastal Habitat Assessment Division.

Van Volkenburgh, Peter, 1985. Personal Communication. New York Department of Environmental Conservation Shellfish Division.

North Sea Municipal Landfill (UD#2 II-16)
Southampton, New York
30 June 1985

Location and Nature of Site

North Sea Municipal Landfill is an active 110-acre solid waste landfill owned by the Town of Southampton. The landfill accepts residential, commercial, industrial, and septic wastes. The lack of a leachate collection system, landfill liner, or diversion structure has precluded a determination of the quantity of solid, sludge, and liquid waste at the site.

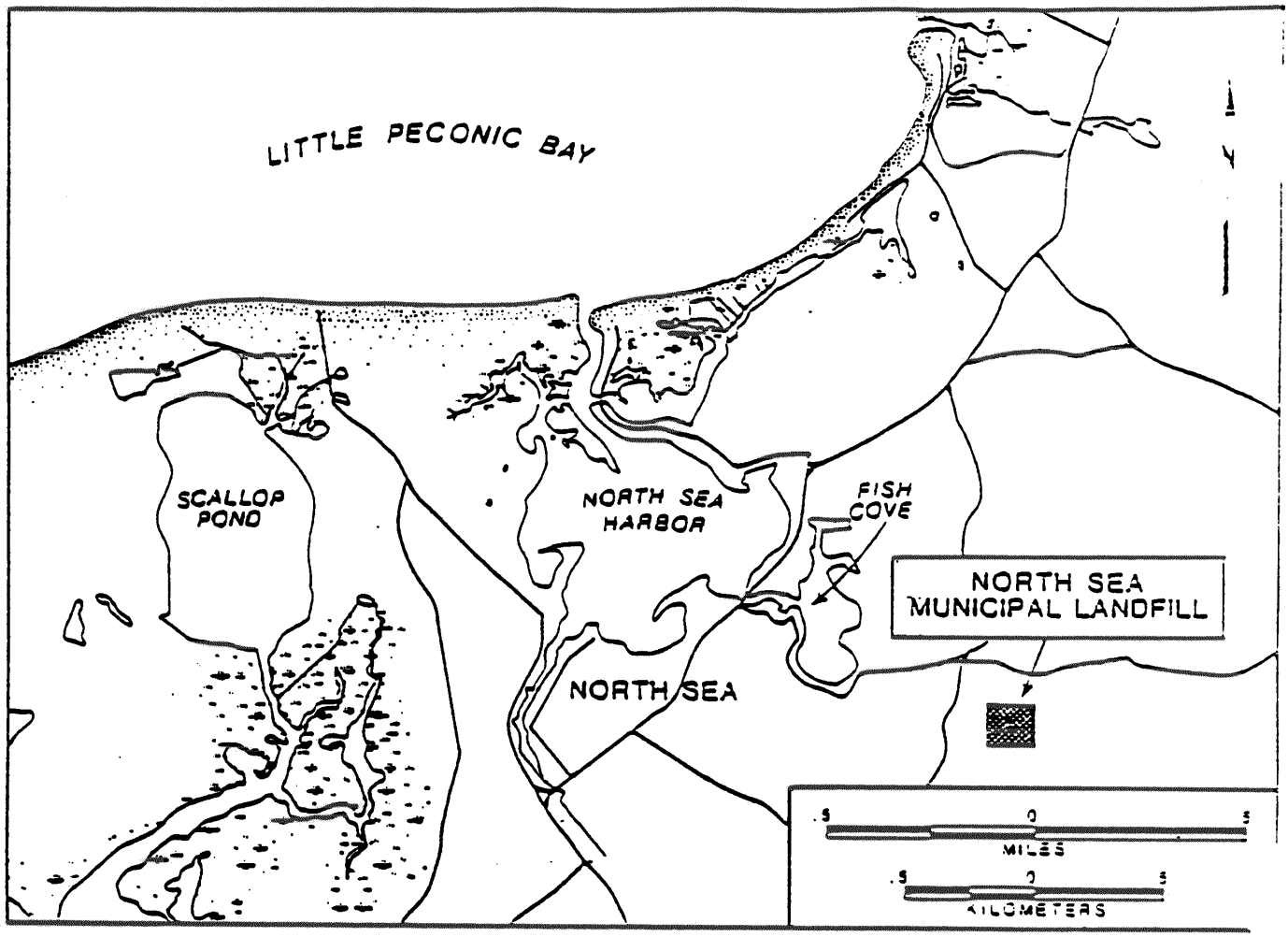
The Town of Southampton has been cooperating with the Suffolk County Health Department to provide alternate drinking water supplies in areas where the leachate plume has degraded groundwater. EPA has the lead for site investigation and cleanup and has scheduled work on the RI/FS for FY 1986.

Proximity Of Chemical Hazard to Marine Resources

This eastern Long Island site is located near the southern shore of Little Peconic Bay in an area with extensive ponds, coves, and wetlands. The terrain is generally flat with elevations less than 30.5 meters above mean sea level.

A plume of contaminated groundwater is moving northwest from the site and has resulted in the closure of several drinking water wells. Monitoring wells and nearby private wells have been contaminated with heavy metals and vinyl chloride.

Groundwater in this area flows about 550 meters to Fish Cove, a major recreation and fishing area. The site is also 1.6 kilometers from a wetlands area. No analyses of contamination levels from the leachate plume entering Fish Cove have been conducted nor are any planned.


LITTLE PECONIC BAY
SCALLOP POND
NORTH SEA HARBOR
FISH COVE
NORTH SEA MUNICIPAL LANDFILL
NORTH SEA
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MILES
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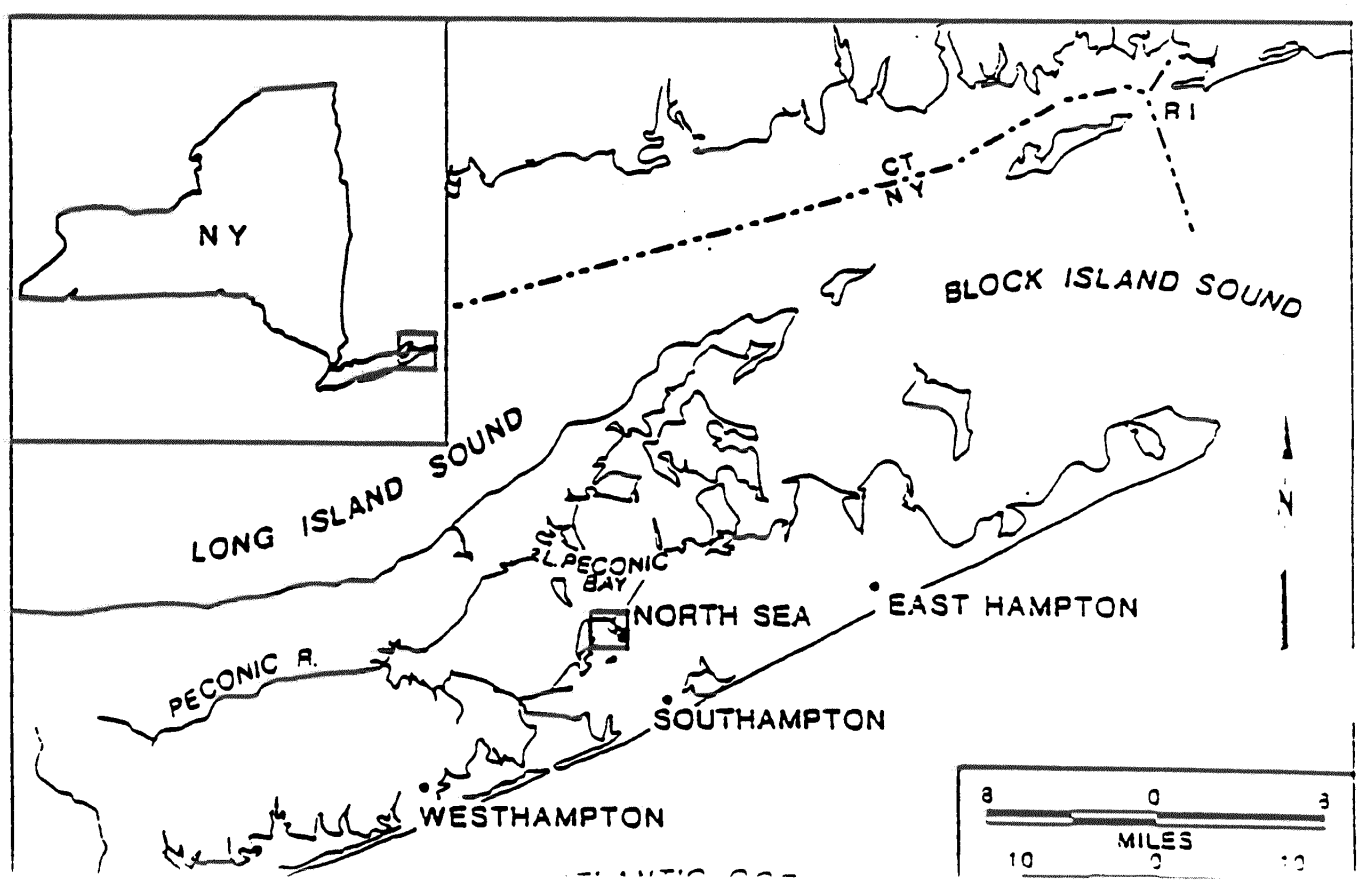
KILOMETERS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BLOCK ISLAND SOUND
LONG ISLAND SOUND
L. PECONIC BAY
NORTH SEA
EAST HAMPTON
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WESTHAMPTON
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Marine Resources at Risk

Fish Cove is a small, tidally-influenced body of water approximately 500 meters by 300 meters in size. Flow in the cove is to North Sea Harbor via a tidal creek about 400 meters in length. North Sea Harbor is approximately 600 acres in size and is connected to Little Peconic Bay via a navigable channel approximately 1,000 meters in length.

The Fish Cove shoreline is a mixture of bulkhead, gravel beach, and marsh. The shoreline of North Sea Harbor is partially bulkheaded and the remainder is marsh.

Alewife are known to enter North Sea Harbor and migrate inland via Alewife Creek to Big Fresh Pond where spawning occurs. Alewife may also enter Fish Cove to spawn.

The anadromous fish present in Little Peconic Bay threatened by the North Sea site include the Atlantic sturgeon, American shad, alewife, blueback herring, and striped bass. Flounder, tautog, bluefish, black seabass, weakfish, scup, and cunner are also found in the Bay.

Hard clam beds are harvested in the waters of North Sea Harbor but are not of any commercial significance.

Raptors, including nesting osprey, are present in the vicinity of the site, particularly on Robins Island five kilometers west of the North Sea site in Little Peconic Bay. The least and common terns are present in the area during spring and summer. Neither Fish Cove nor North Sea Harbor are important overwintering habitats for migratory waterfowl; total numbers are usually less than 100 birds.

Conscience Point National Wildlife Refuge is located on the west shore of North Sea Harbor approximately three kilometers west of the site. The North Sea Harbor area is an important recreational resource to local inhabitants.

Site Chronology

1963	Start of operation of site as a municipal landfill.
1979	Closure of private wells to the north of the site.
1981	Private homes affected by groundwater plume connected to public water supply.
May 1983	Preliminary Assessment Report completed.
Dec. 1984	EPA Hazardous Ranking Score Report completed.

NOAA Reviewer:	Gary Ott, NOAA Hazardous Materials Response Branch
EPA Contact	Mel Hauptman
Local Contact:	Southampton Highway Department

References

CERCLA Implementation Report, 1984. U.S. Environmental Protection Agency Region II, Hazardous Waste Site Branch.

Hazardous Ranking Score Report (HRS), 1984. U.S. Environmental Protection Agency Region II.

Johnson, John, 1985. Personal Communication. Lewis McClain.

Poole, Mr., Dave Fallon, Frank Panek, Kenneth Koetner, 1985. Personal Communications. New York Department of Environmental Conservation Finfish Division.

Swift, Bryan, 1985. Personal Communication. New York Department of Environmental Conservation Coastal Habitat Assessment Division.

Van Volkenburgh, Peter, 1985. Personal Communication. New York Department ofEnvironmental Conservation Shellfish Division.

Tysons Dump (III-36)
Upper Merion Township, Pennsylvania
30 June 1985

Location and Nature of Site

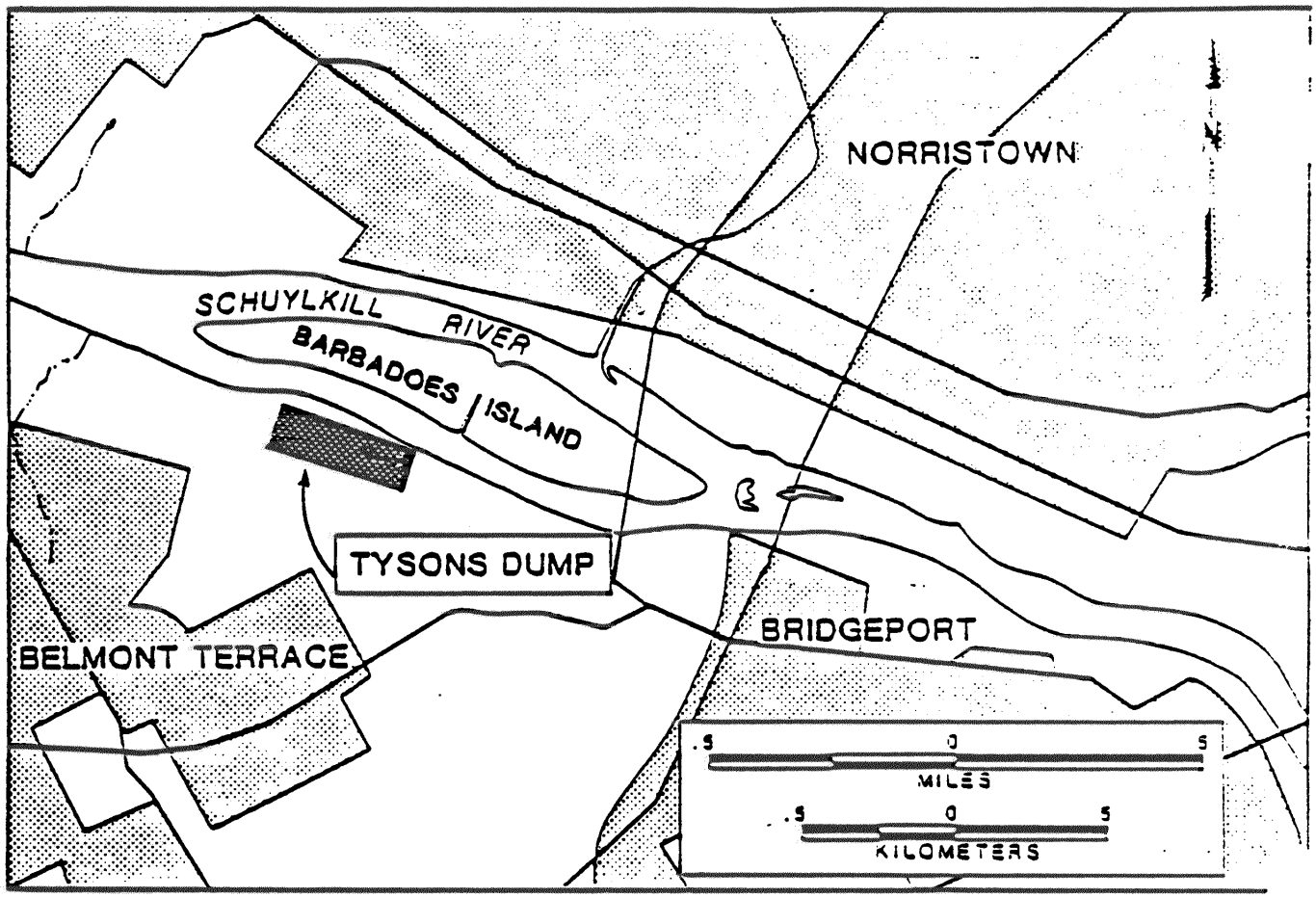
Tysons Dump is an abandoned, privately owned five-acre waste dump located in an industrial area. From 1962 to 1973, sludges and liquid hazardous wastes, primarily chlorinated and other organic and non-organic solvents (toluene, benzene, xylene) were dumped into seven small lagoons on a terrace above the Schuylkill River. Wastes have leached into a small stream that flows about 90 meters into the Schuylkill, which then flows into the Delaware River, about 32 kilometers downstream.

An Immediate Removal Action was initiated in 1983 to install a leachate collection and an air stripping system for removal of organics from the leachate stream. The backfilled lagoons were stabilized with soil and hydro seed. No soil or water was removed from the site during this action.

Proximity of Chemical Hazard to Marine Resources

EPA records of sampling and analysis show contamination by, primarily, 1-2-3 trichloropropane and other organics. Concentrations in the groundwater were in the percent range (in excess of 10,000 ppm); testing of offsite groundwater indicated 100 ppm concentrations. Subsurface test borings taken on the site documented a 100 ppm contamination level over an extensive area and as deep as six meters in some locations. Offsite contamination in the Schuylkill River flood plain was not evaluated.

Surface waters from the Tysons Dump site lead to the Schuylkill River. The discharge from the Tysons site has been described as "minimal" since the 1983 removal action. Seepage from the site has been reported to have coated nearby wetlands with an oily sheen.


NORRISTOWN
SCHUYLKILL RIVER
BARBADOES ISLAND
TYSONS DUMP
BELMONT TERRACE
BRIDGEPORT
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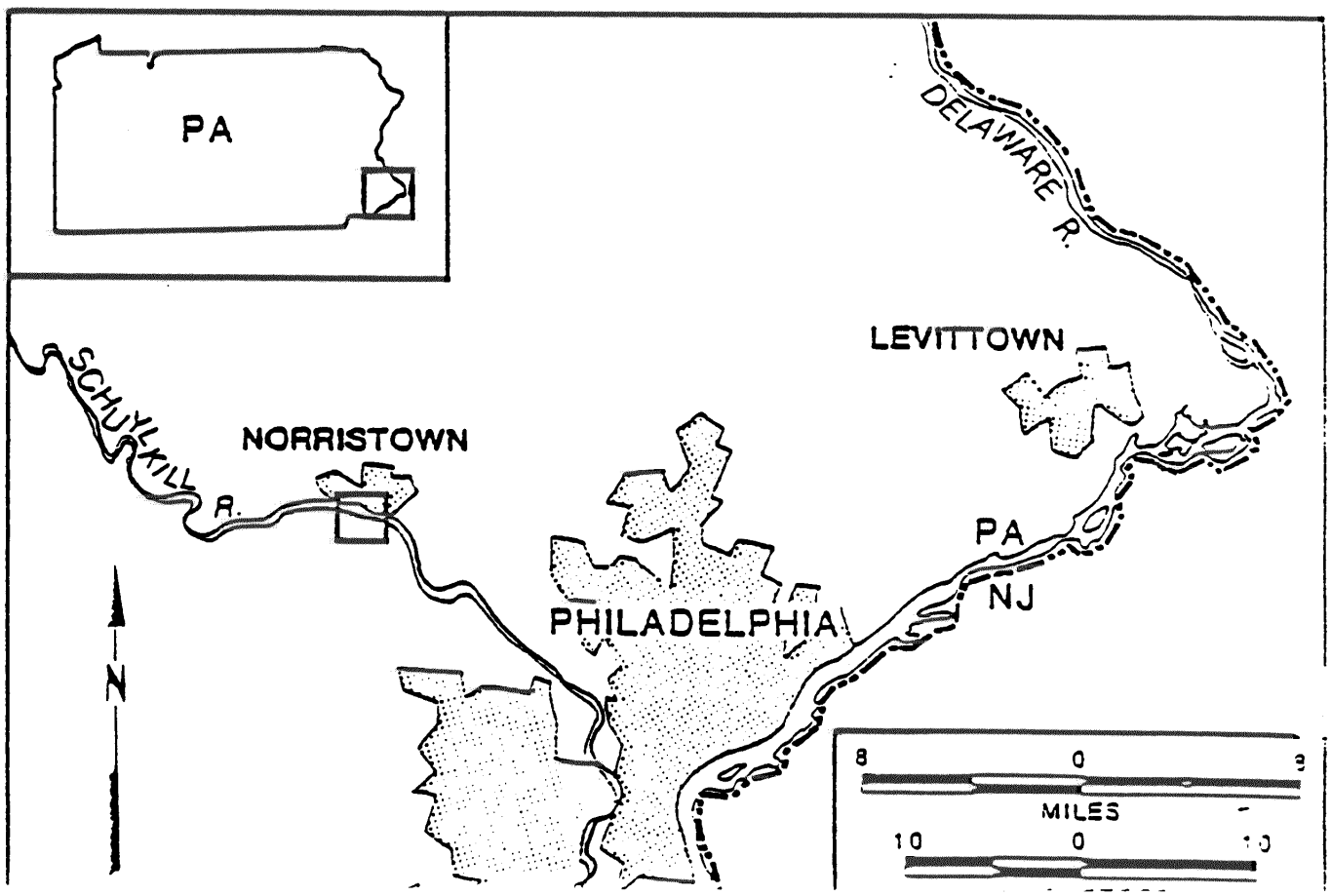
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Marine Resources at Risk

The Tysons Dump waste site may affect the fishery resources of the Schuylkill River from the vicinity of Norristown to its confluence with the Delaware River at Philadelphia. Two dams are located on the Schuylkill River below Norristown; the Fairmount dam, about 14 kilometers upstream from the Delaware River, has an operating fish ladder. Anadromous fish (striped bass, alewife, American shad, and blueback herring) and the catadromous American eel, are known to utilize the fish ladder in their seasonal migrations up the Schuylkill River. The Flatrock dam near Bala-Cynwyd, approximately ten kilometers upstream of the Fairmount dam, is about six meters high and was constructed without a fish ladder. Once a fish ladder is completed for this dam, all anadromous species will be able to ascend upriver past Barbados Island and the waste site.

The Pennsylvania Fish Commission conducts a hatchery program for stocking juveniles of American shad in portions of the Schuylkill River between Reading and Philadelphia. The purpose is to re-establish spawning runs from the Delaware River into the Schuylkill River by 1990. Currently, released juveniles are able to survive downstream passage over dams but returning adult shad can migrate upriver only to reaches below the Flatrock dam. Any toxic substance discharge into the Schuylkill River may impact the hatch rate and larval survival rates for anadromous fish intended to benefit from efforts of the restoration program.

The Pennsylvania Department of Environmental Resources at Norristown operates a chemical monitoring station for the Schuylkill River. A time series of data for chemical contaminants of water and fish flesh is available from this agency. At present, fish flesh sampled between Reading and Philadelphia have concentrations of lead, PCB's, and chlordane registering above Federal standards for human consumption. At EPA's request, the U.S. Department of the Interior will review the Tysons Dump site this year to evaluate damage to natural resources, and determine whether to grant a release from future natural resources claims.

Site Chronology

1962-1973	Operation of the Tysons Dump site.
1973	Pennsylvania orders the site closed.
1983	EPA receives notification of the site.
March 1983	Site investigation and immediate removal action completed.
Sept. 1983	Proposed addition of the Tysons Dump site to the NPL.
Dec. 1983	RI/FS completed.
May 1985	Site construction design contract signed.
March 1986	Projected construction scheduled.

NOAA Reviewer: Ann Hayward Rooney, NOAA Hazardous Materials Response Branch
EPA Contact: Phillip G. Retallick, On-Scene Coordinator

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CERCLA Emergency Response/Immediate Removal Actions: Project Summaries, FY '83, 1983. U.S. Environmental Protection Agency Region III, Vol II., Suite #17.

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Bailey Waste Disposal (UD#2 VI-5)
Bridge City, Texas
30 June 1985

Location and Nature of Site

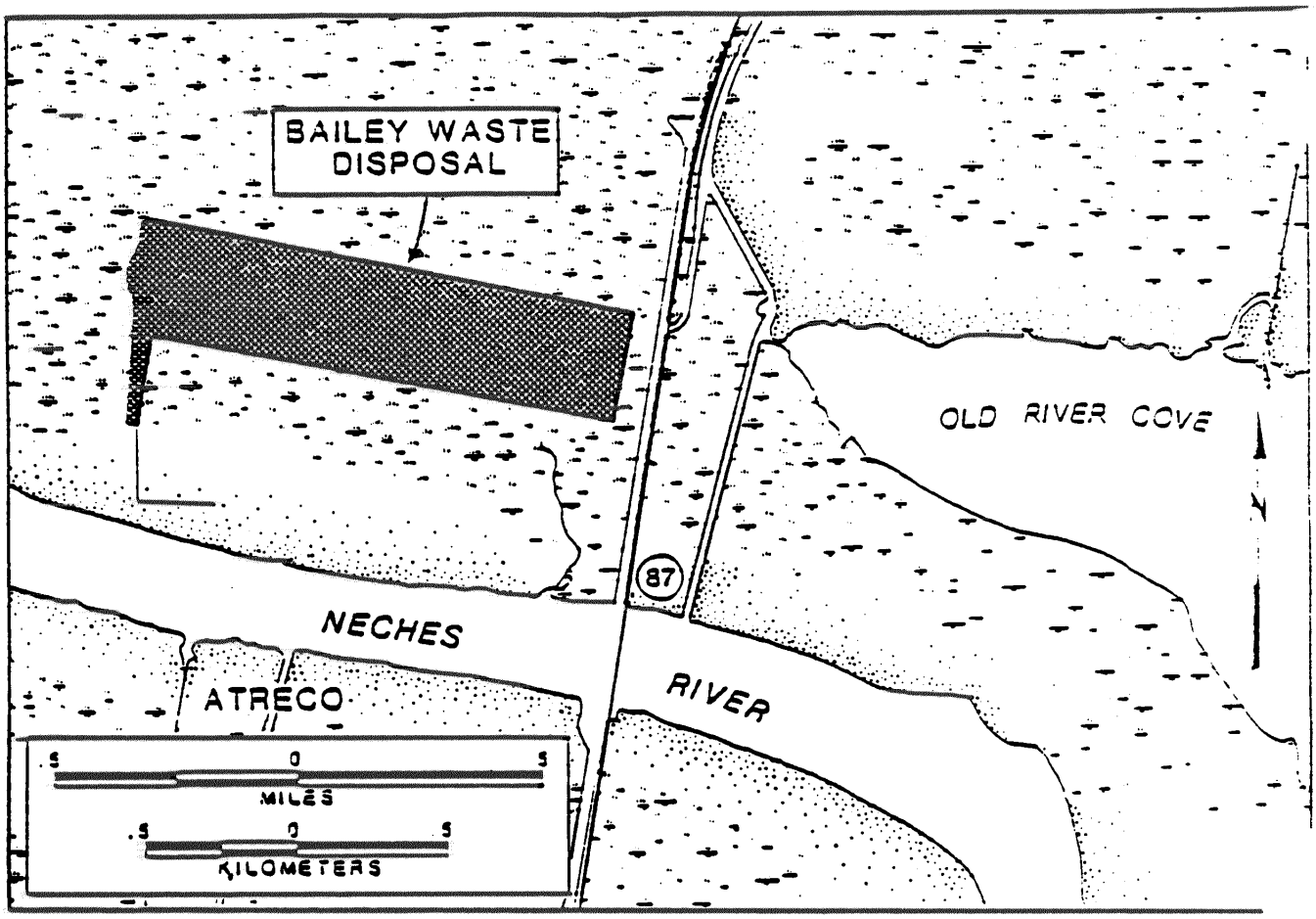
Bailey Waste Disposal is an industrial waste disposal site which was active in the 1950's and mid-1960's. The site is located adjacent to the Rainbow Bridge at Bridge City, Texas, and the north shore of the Neches River and Lake Sabine. The property has changed hands several times since the site was closed to disposal activity in the late 1960's. The present owner of record is Gulf State Utilities, who acquired the property in 1971 as part of a land acquisition and shoreline consolidation effort.

Definition of waste pits on the site is difficult due to the generally marshy nature of the area. Survey data indicate that pit depths range from approximately one to four meters in an area that is flushed frequently by rains, floods, and tidal groundwater. A tidal period was documented in the groundwater levels in test wells over the site. Soil permeability in the clay and sand soils is high, and leads to a shallow water table connecting with the Neches River.

Proximity of Chemical Hazard to Marine Resources

The Texas Department of Water Resources (TDWR) is the lead agency for the State of Texas. A preliminary assessment of the site conducted by TDWR in 1980 resulted in an EPA investigation and inclusion of the site in the NPL. The site itself is closed to the public by a fence and sign system, though recreational and subsistence fishing occurs literally at the main entrance to the site. Public awareness of the site and the potential human exposure via food chain contamination is very high as a result of subsistence fishing activity in the area.

Investigations conducted by EPA in 1982 were oriented toward detecting groundwater contamination. TDWR has conducted a very limited marine sampling program; the results of the sample analysis are inadequate to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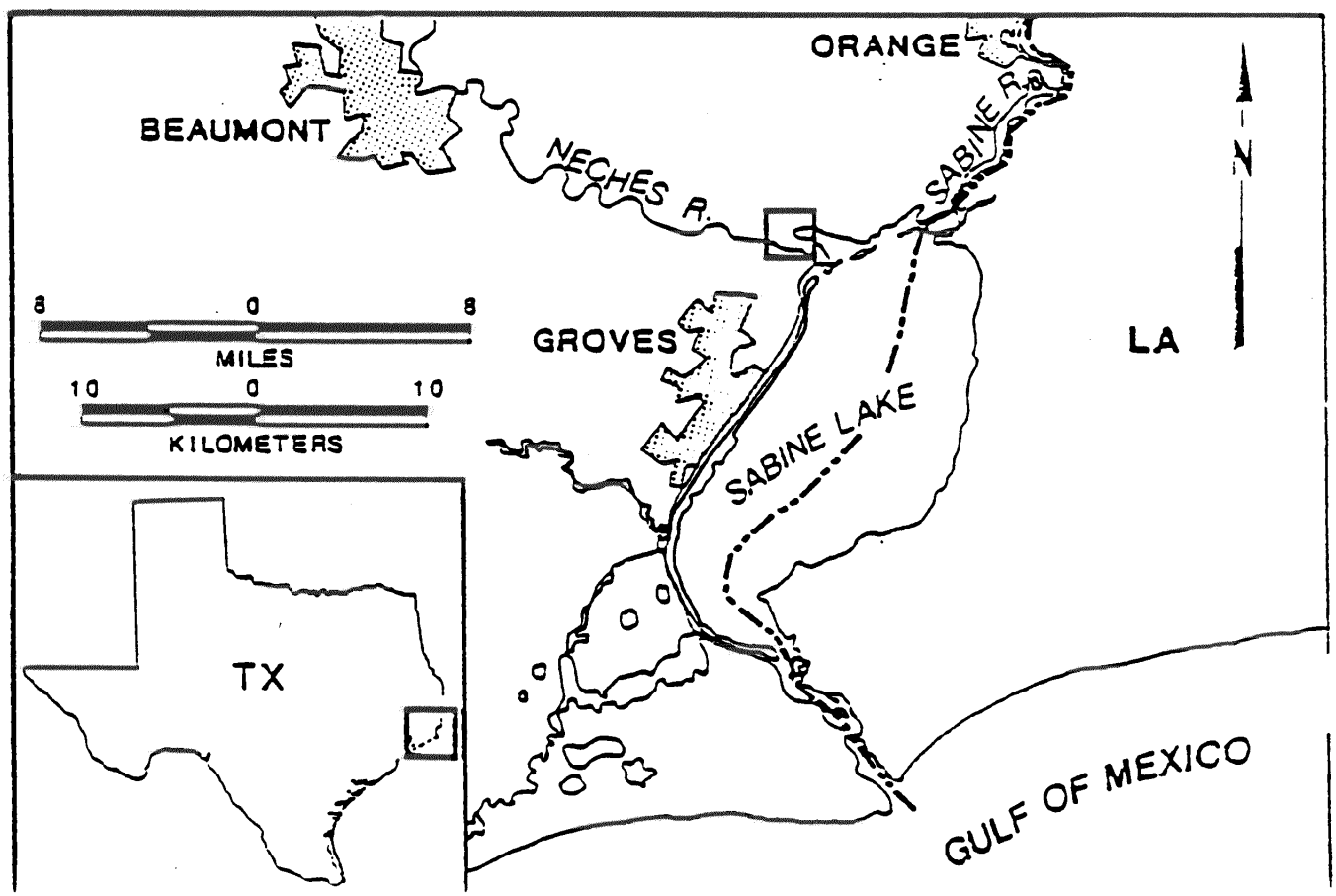
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confirm or disprove contamination of the local crab and bottom fish populations. Groundwater samples from the test wells were analyzed for total organic carbon (TOC), total organic halogens (TOH), pH, specific conductivity, and metals, with a total of 33 priority pollutants (.006 - 1,400 ppm) identified. An additional 128 non-priority pollutants (.006 - 6,000 ppm) were also identified. The majority of these non-priority pollutants contain root compounds which are on the hazardous list, and very probably represent combination and degradation products of the compounds originally present in the site. The most significant wastes include solvents (toluene, benzene, tridichloroethylene, dichloroethylene), chlorides (vinyl, methylene, benzene), phthalates, fluorides, phenols, aldehydes, glycols, and traces of nine heavy metals.

Though no sampling data exist, there is little doubt that soluble contaminants have left the site by ground and surface routes. Insoluble fractions of compounds are common over the surface of the site, suggesting the possiblity of offsite migration during flooding episodes. Despite the fact that the Neches River and Sabine Lake contain high background levels of many of the pollutants common to the Bailey site, sampling during a flooding period could identify offsite pollutant migration.

Marine Resources at Risk

Sabine Lake is approximately 416 square kilometers in area. The average depth is two meters, and salinities range from 3-50 parts per thousand (ppt). The lake and associated rivers support both marine and freshwater fisheries, some of commercial importance. These include oyster, croaker, striped mullet, black drum, red drum, gaff-top catfish, seatrout, southern flounder, shrimp, menhaden, and blue crab. The blue crab fishery is currently the most important of these fisheries. Sabine Lake also supports a large sport fishery. Nineteen species of ducks and geese inhabit two major wildlife refuges and other portions of the lake shores.

At present, the EPA action is concentrating on the RAMP study. Whatever action is called for by the RAMP must deal with the nature of the site, and the fact that cleanup may involve a risk of releasing more pollutants into the Neches-Sabine system as the site is disturbed.

Site Chronology

1950-1965 Active disposal at site.
1976 Gulf State Utility purchases site.
1980 TDWR makes preliminary site investigation.
1981 EPA site investigation proposed.
1982 TDWR collects crab samples at site.

1984 EPA phase I-III investigations complete. Results in proposal to add site to NPL.

1985 EPA Legal is reviewing case and holding discussions with numerous documented users of the site, and present owner.

NOAA Reviewer: Todd Baxter, NOAA Hazardous Materials Response Branch
EPA Contact: Drew Puffer
TDWR Contact: Harry Boudreaux

References

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Phase II Investigation, Vol I., 1982. Espey, Huston and Associates, Inc., Austin, Texas.

Puffer, Drew, 1984. Personal Communication. U.S. Environmental Protection Agency, Dallas, Texas.

Montrose Chemical Corporation (UD#2 IX-6)
Torrance, California
30 June 1985

Location and Nature of Site

The 17-acre Montrose Chemical Corporation site is located in a mixed light industrial and residential area of Torrance in Los Angeles County. This site, in operation from 1948 to 1982, was a major facility for the production of the pesticide DDT. Although DDT was banned for use in the U.S. in 1972, Montrose continued its production for export markets until 1982. No DDT has been used in California since 1976.

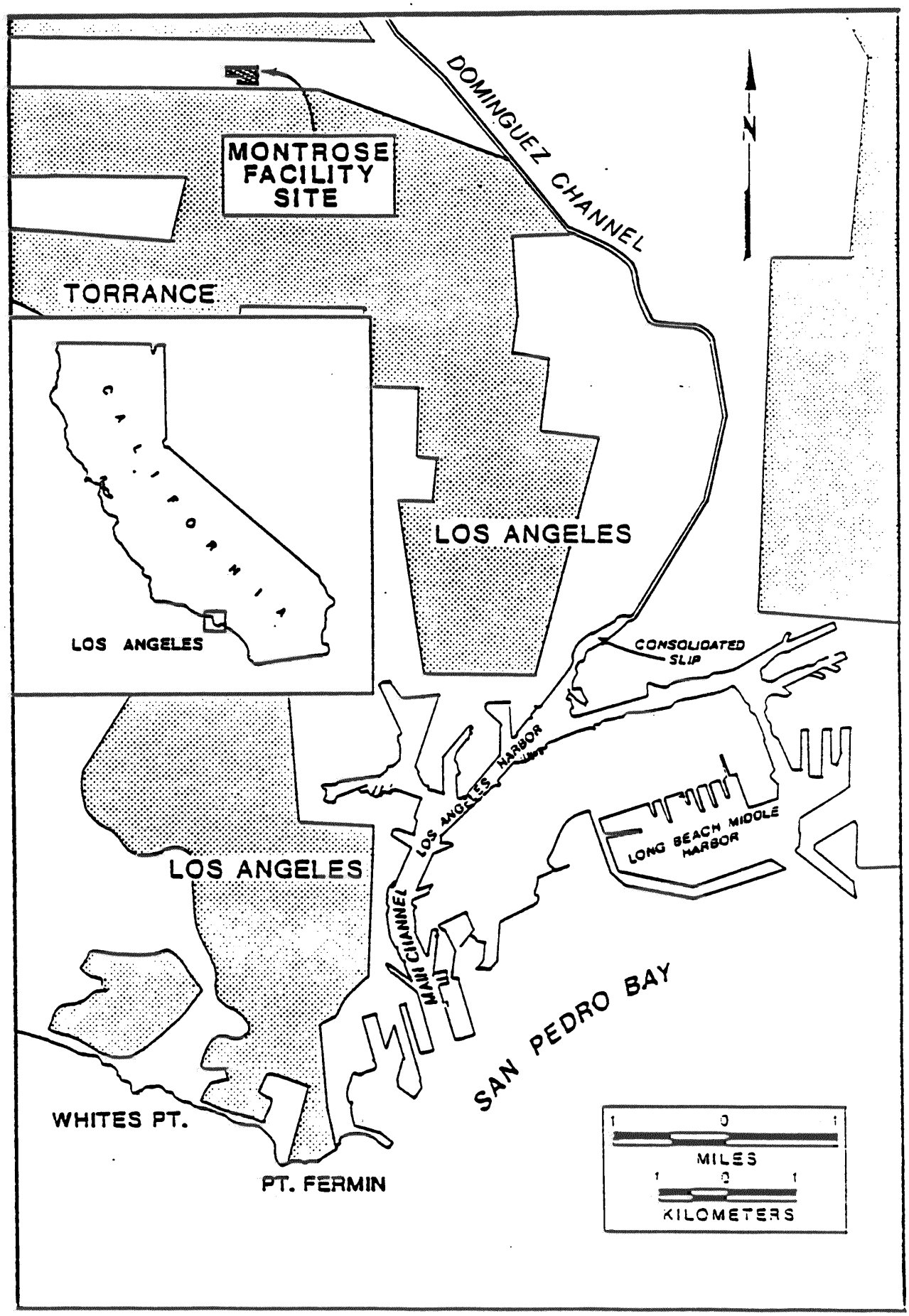
Operations at the site included formulation, grinding, packaging, and distribution of DDT. Montrose razed the facility in 1982 after manufacturing operations ceased. In January 1985, the company began installing an asphalt cap over the site to control offsite migration of DDT contamination.

Chemical Hazards

Proximity to Marine Waters

Storm water from the site flows along a ditch to a catch basin, and then through an underground storm drain for approximately one kilometer to the Torrance Flood Control Channel. The Torrance Channel connects with Dominguez Channel, which empties into Los Angeles Harbor at Consolidated Slip, a total stream distance of approximately 15 kilometers from the site.

Prior to 1970, Montrose discharged waste liquid from the manufacturing process through Joint Outfall 'D', of Sanitation District 5, Joint Water Pollution Control Plant (JWPCP), Los Angeles County. After treatment at a primary sewerage processing facility the wastes were discharged from this system into the ocean at Whites Point in San Pedro Bay. Wastes were disposed of in nearby landfills after discharge into the sewers was halted.


MONTROSE FACILITY SITE
DOMINGUEZ CHANNEL
N
TORRANCE
LOS ANGELES
CALIFORNIA
LOS ANGELES
CONSOLIDATED SLIP
LOS ANGELES HARBOR
LONG BEACH MIDDLE HARBOR
LOS ANGELES
MAIN CHANNEL
SAN PEDRO BAY
WHITES PT.
PT. FERMIN
1 0 1
MILES
1 0 1
KILOMETERS

species of marine flora and fauna are also at greater risk than are top- and mid-water species.

Benthic invertebrates, including mollusks, annelids, coelenterates, and crustaceans, are in direct and constant exposure to contaminated sediments. These organisms probably represent the current point of DDT entry into the food chain. Several resident fish species that exhibit demersal feeding habits have been sampled in the vicinity since the 1970's. The fish sampled included white croaker, black perch, white perch, halibut, queenfish, and assorted species of rockfish. Of these fish, the commercially important white croaker was the species most consistently sampled for DDT derivatives.

Resident populations of coastal bottlenose dolphin and several species of seals are also prevalent in the vicinity of the Montrose site.

Resident bird populations in the coastal area of the site were reduced by the documented DDT discharges from the site. Of particular concern was the decline in resident pelican and cormorant populations. All resident bird populations in the area have been documented as increasing in numbers since the closing of the Montrose plant.

Crustaceans are known to be extremely sensitive to DDT. The shrimp, P.duorarum, experiences total mortality at water concentrations of 0.12 ppb of DDT after 28 days of exposure. Several species of Pandalid shrimp which are found in the Pacific Ocean are potentially endangered by the contaminated sediments and periodic surface runoff waters.

Other marine invertebrates can be expected to experience disruption of body functions and reproductive capacity at minute concentrations. These organisms are near the base of the food chain and therefore any reduction in their population negatively impacts all higher trophic levels. The long-term persistence of DDT is a serious threat to the local marine fauna in the vicinity of the site. Benthic marine organisms that are detritivores or that ingest sediments directly can continue to move DDT into the food chain until approximately 30 cm of uncontaminated sediments have been naturally deposited.

The coastal currents in the vicinity have been documented to have expanded the zone of contaminated sediments as mapped by the NOAA National Marine Fisheries Service in 1972. As this process continues, previously safe zones will be contaminated.

Because of extensive sport- and commercial fisheries activity in the area, the process of bioaccumulation represents a threat to human health. DDT is known to have a residue accumulation in aquatic food chains of 100,000 to 2,000,000 times the water concentration. As a result of this acknowledged threat, local health officals have considered a seafood ban for the area since1970.

discharged from this system into the ocean at Whites Point in San Pedro Bay. Wastes were disposed of in nearby landfills after discharge into the sewers was halted.

Contaminants and Concentrations

The primary contaminant of concern is DDT and its degradation products, DDE and DDD. Other materials may be present at the site. DDT levels in the soil on site range from .35 - 95,000 ppm. Contamination levels in storm water runoff measured in 1982 ranged from 187-695 ppb. Sediments in Joint Outfall 'D' pipes showed total DDT levels of 16-44% in 1977. DDT levels in wastewater discharges from the JWPCP outfall are shown in the following table.

	Concentration ppb	Mass Emission kg /year
1980	1.05	542
1981	0.84	422
1982	0.45	223
1983	0.375	183

Physical Extent of Contamination

There are at least four areas of contamination which must be considered. An estimated 340 tons of DDT is still contained in the top one and one half meters of soil on the manufacturing site. The mass of DDT contained in sediments in Joint Outfall 'D' is estimated to be 44 tons. The top one-third meter of sediments in a 29-square kilometer area surrounding the ocean outfall contains an estimated 200-275 tons of DDT. Finally, the sediments of Los Angeles and Long Beach Harbors are likely to have been contaminated by surface runoff via Dominguez Channel and airborne emissions.

Duration of Contaminant Release

The facility operated at this site from 1948 until 1982. Process water was discharged into the sewer system from about 1953 until 1970. Surface runoff from the site continued until about March 1985 when Montrose capped the contaminated soil with asphalt. There have also been reports of airborne contamination resulting from grinding operations

Ability to Document Injury or Loss

Current environmental monitoring is being conducted by the Southern California Coastal Water Research Project (SCCWRP), California State Department of Health Services, and Bodega Bay Marine Institute. These agencies monitor water chemistry and animal tissues for the presence of toxic substances, including DDT.

In 1981, white croaker in the vicinity of Cabrillo Pier were found to have a wet tissue concentration of 1.7 ppm. By 1985, five white croaker sampled from the pier contained 2.6 ppm DDT and 7.6 ppm was noted from white croaker taken from the White Point outfall.

Although the sample sizes were not statistically valid for the fish population at risk, the present tissue concentrations of DDT are not significantly different from the earlier samples taken in the 1970's. This time span and results of sampling are indicative of the persistence of DDT.

At the top of the food chain, coastal bottlenose dolphins were sampled for fat content of DDT. From 1981 to 1985, DDT concentrations in fat ranged from 126 to 2,070 milligrams per kilogram (mg/kg) of wet fat tissue. This is a clear indication of bioaccumulation. DDT has also been found in the blubber of the Baltic grey seal, the ringed seal, and the common grey seal. The impact to marine mammals is unclear since mammals are less sensitive to DDT than are invertebrates or fish.

Earlier concerns regarding risk to human health from DDT-contaminated marine organisms finally culminated in the 1985 State of California-announced ban on the taking and sale of marine resources from the Gerald Desmond Bridge to the White Point area. It is known that $800,000 worth of white croaker were caught in 1984 from this zone. In addition to the loss of commercial fishing within the zone, local sportfishing infrastructure businesses report a 50% reduction in product sales. All commercial fish sales within the land area adjacent to the ban zone require a state certification that the seafood product was captured outside of the zone.

Although the most significant contribution of DDT to the environment is documented to have originated from Montrose Chemical Corporation, other sources are known to exist in the area. SCCWRP reported in 1985 that an annual total of 218 kg of DDT is discharged to the ocean waters from seven ocean outfalls from Ventura to San Diego. Of this amount, 183 kg comes from the White Point outfall. However, the daily contribution from these outfalls is below current levels of detection.

In February 1985, a storm event in Los Angeles was sampled for DDT. The Los Angeles River, draining 30% of the county, was determined to have contributed 900 grams of DDT for that single event. It is believed that the source was from agricultural areas and probably came from sediments.

Feasibility of Habitat or Resource Restoration

The extent of contamination in sediments of San Pedro Bay, and the

long residence time of DDT and its metabolites, make restoration of habitat very complex. Proposed solutions will require careful evaluation of pollution control programs in the region and ongoing harbor maintenance and development activities.

Site-Related Actions

Summary of EPA/State Response Actions

Aug. 1980	EPA notificated by Montrose of hazardous waste activity at site.
Dec. 1980	EPA conducts RCRA investigation of site.
Nov. 1982	Preliminary site CERCLA investigation.
Dec. 1982	EPA issues a 3007/104 letter to Montrose.
May 1983	EPA issues Administrative Order (106) to Montrose.
Continuous 1984	EPA discusses Montrose's plans to investigate and remove site contamination.
1985	California announces ban on harvest and sale of fish.

Present Stage of EPA Action at the Site

A RI/FS Final Workplan has been completed by EPA. Work outlined in the RI/FS is scheduled to begin in the summer of 1985 and is expected to take 14 months to complete. Work being conducted under the RI/FS will not include evaluation of DDT contamination in Los Angeles and Long Beach Harbor areas or San Pedro Bay. EPA may extend the scope of site-related studies to these areas in the future.

Responsible Parties with Adequate Means Identified

Montrose Chemical Corporation has been identified as the party responsible for on-site contamination. The company apparently has adequate means to conduct a site cleanup.

Interest of Co-Trustees in Damage Assessment Investigations

The U.S. Department of the Interior (DOI) has a strong interest in evaluating natural resource damages that may be attributable to the Montrose site. No formal study has been undertaken by DOI. The State of California has not yet considered natural resource damages associated with this site.

Site Chronology

1947	DDT manufacturing facility operational.
1953	Montrose receives permit to discharge into sewer system.
1970	Discharges to Los Angeles County sewer system discontinued.
1982	Manufacturing ceases, all buildings removed from site.
1985	Contaminated soil at site capped with asphalt.

NOAA Reviewer: Robert Pavia, NOAA Hazardous Materials Response Branch
EPA Contact: Therese Gioia

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Region 9 Toxics and Waste Management Division Investigation Report: Montrose Chemical Corp., 1983. U.S. Environmental Protection Agency San Francisco, California.

Alviso Dumping Areas (UD#2 IX-9)
Alviso, California
30 June 1985

Location and Nature of Site

The Alviso Dumping Areas site covers approximately 45 acres at the southern end of San Francisco Bay. This area of Alviso had been used as a landfill during the 1950's and 1960's. The landfill, and other areas of the town, may have received asbestos-contaminated waste over the last 25 years.

The original discovery of asbestos occurred in 1983 during excavations along the north levee of the Guadalupe River. After this discovery, the Santa Clara Valley Water District was ordered to dispose of the excavated material as a hazardous waste. The situation was complicated by winter flooding which spread contamination to other areas of the community.

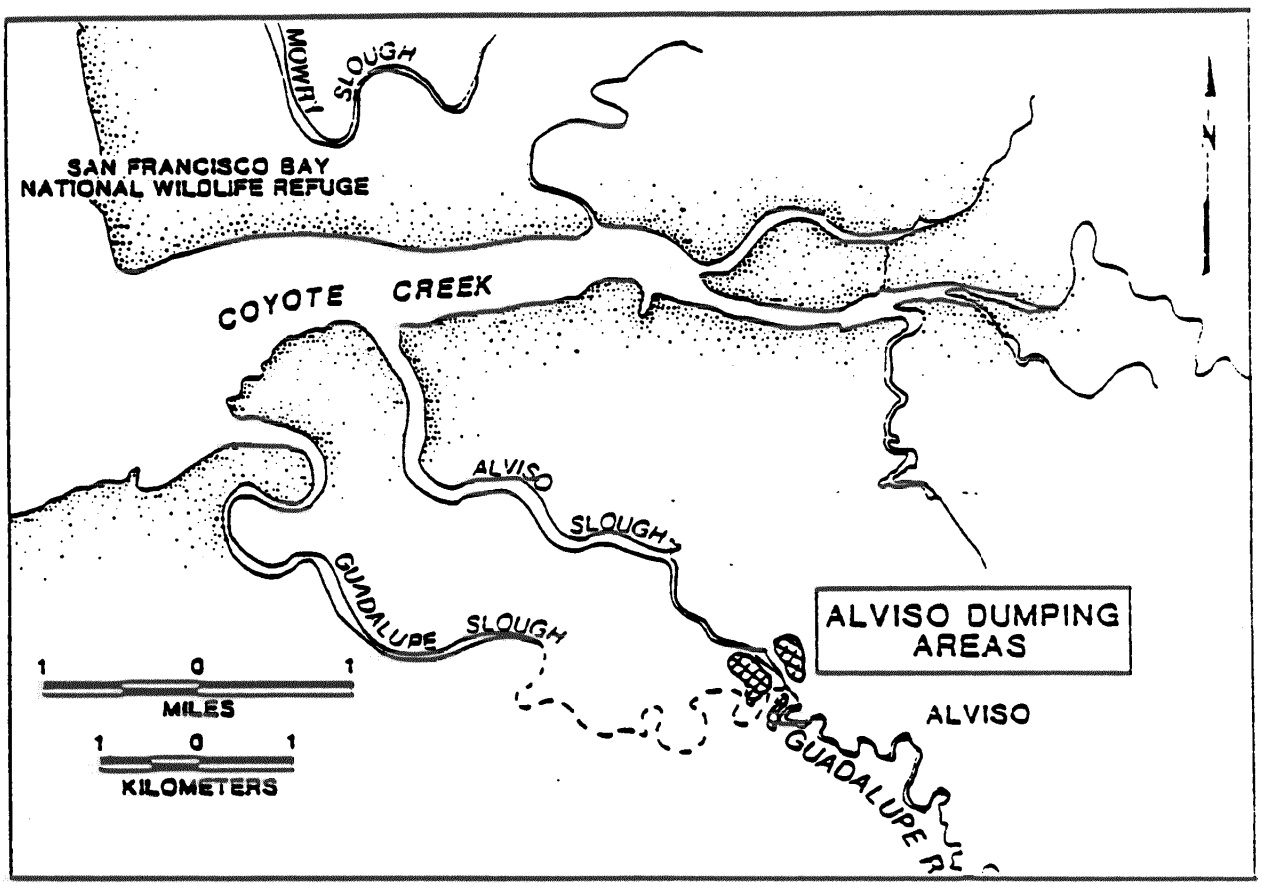
The principal concern of EPA, the State of California, Santa Clara County, and local agencies is the potentially serious contamination of the soil and ground- and surface water in the vicinity of former disposal areas. Monitoring wells located in the vicinity of the dumping areas showed contamination levels of 1% and 5% asbestos, as well as trace metals.

Proximity of Chemical Hazard to Marine Resources

Both banks of the Guadalupe Slough, a mobile home trailer park, commercial areas, and portions of the Alviso Slough flood plain, are all within the area of asbestos contamination. Asbestos-contaminated surface runoff flows into the Alviso and Guadalupe Sloughs during periods of heavy rains. Two consecutive winter floods in 1982 and 1983 probably caused contamination of the sloughs by asbestos laden water and soil.

Trace amounts of organic chemicals (less than 30 ppb) were found in soil samples taken from various locations within the boundaries of the site. Two types of asbestos, crocidolite (blue) and chrysotile (white), have been found in soil samples collected in the town of Alviso.

No sampling has been conducted in either the Guadalupe River or Alviso Slough. It is suspected, though not yet confirmed, that there may be


MOWRY SLOUGH
SAN FRANCISCO BAY
NATIONAL WILDLIFE REFUGE
COYOTE CREEK
ALVISO SLOUGH
GUADALUPE SLOUGH
ALVISO DUMPING AREAS
ALVISO
GUADALUPE R
1 0 1
MILES
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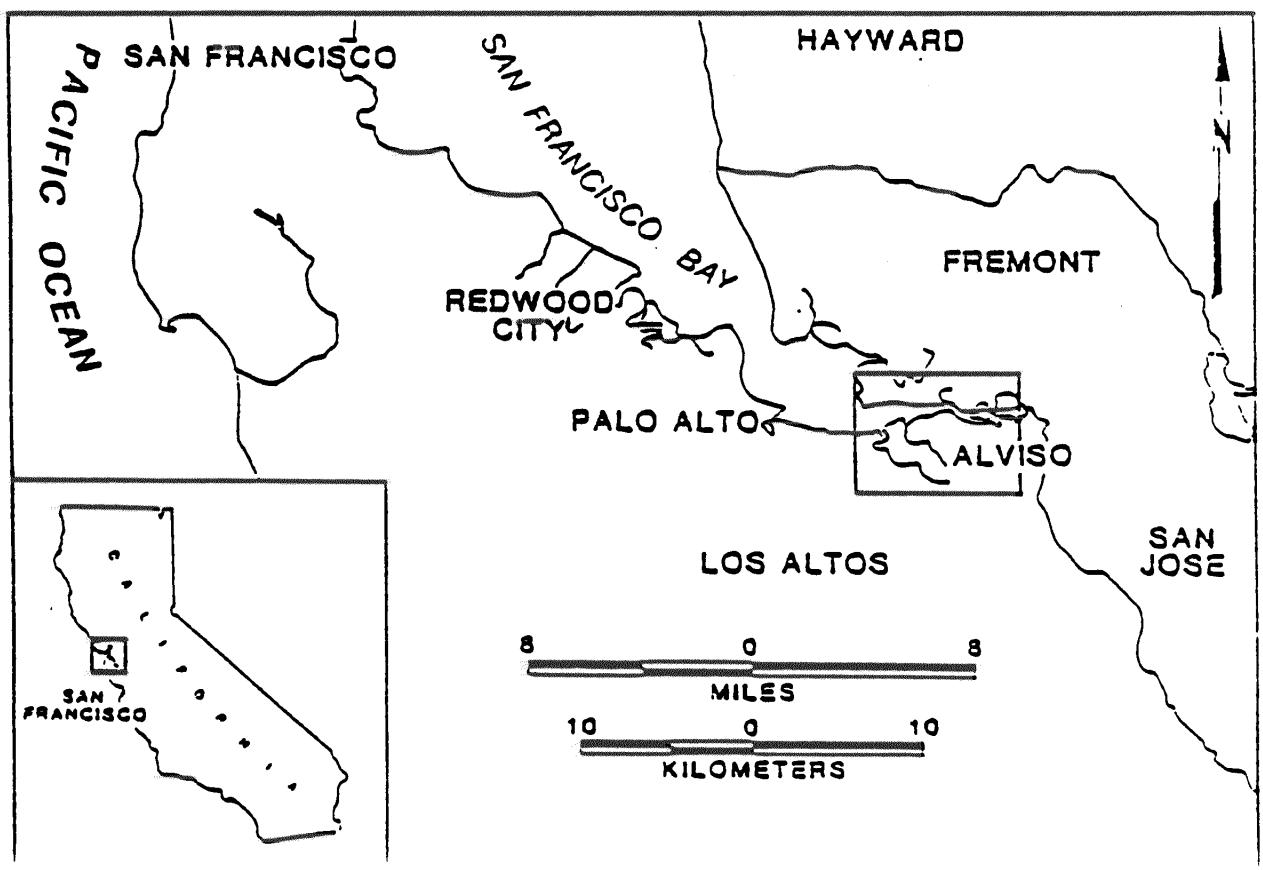
PACIFIC OCEAN
SAN FRANCISCO
SAN FRANCISCO BAY
HAYWARD
FREMONT
REDWOOD CITY
PALO ALTO
ALVISO
LOS ALTOS
SAN JOSE
SAN FRANCISCO
8 0 8
MILES
10 0 10
KILOMETERS

significant levels of asbestos and heavy metals and trace quantities of other organic chemicals in the sloughs.

Marine Resources at Risk

Alviso Slough and Guadalupe Slough flow northwest to Coyote Creek, which forms the southern most part of San Francisco Bay. These tributaries provide a significant habitat for anadromous and other fish, including steelhead trout, striped bass, sturgeon, surf perch, flat fish, and clams. The sloughs may serve as a nursery area for striped bass. The marine resources of the area are not commercially harvested, but there are recreational fisheries in the Guadalupe River.

Harbor seals are known to use the mouth of Coyote Creek as a nursery area. The endangered brown pelican and California clapper rail use wetlands associated with the sloughs and creek. Numerous species of shorebirds and wading birds also nest in wetland areas. The endangered salt harvest mouse uses the wetlands near Alviso Slough.

Site Chronology

June 1983	Soil excavated from north level of slough removed from site and disposed of as a hazardous material.
August 1983	Santa Clara County Health Department discovers elevated levels of asbestos in levees of Guadalupe Slough.
Oct. 1983	State of California finds elevated asbestos levels in air samples taken in residential areas.
Jan. 1984	EPA, State, and county health officials meet to work out plan for public health considerations.
April 1984	EPA requests $1,000,000 for dust control operations and excavations at site.
Nov. 1984-Feb. 1985	Sampling and soil excavation conducted as hot spots are discovered. Air and groundwater monitoring continue.

NOAA Reviewer: Stewart McGee, Jr., NOAA Hazardous Materials Response Branch

EPA Contact: Paul La Courre, Project Officer

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Zoecon Corporation/Rhone-Poulenc, Incorporated (UD#2 IX-10)
East Palo Alto, California
30 June 1985

Location and Nature of Site

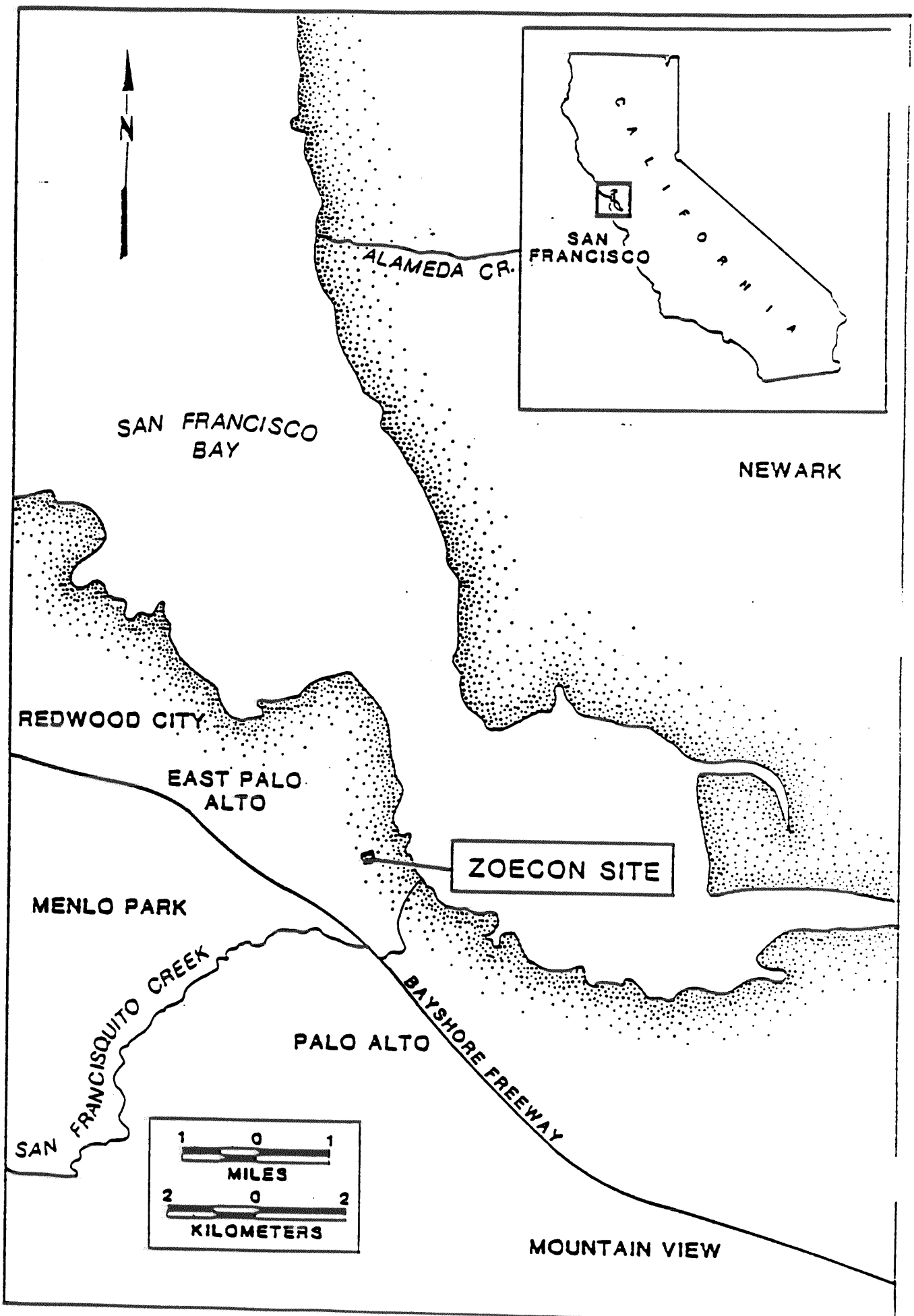
Zoecon Corporation/Rhone-Poulenc, Inc. has been used for industrial purposes for over 60 years. The 5.2 acre site was used from 1926 until 1971 for the production of herbicides and sodium arsenite compounds in underground tanks. Wastes from the arsenite process were disposed of in sludge ponds located on the northeast portion of the property. Zoecon, which purchased the site in 1972, formulates and manufactures insecticides. There appears to be little documentation of the amounts of industrial waste dumped at the site over the years.

Surface soil samples, borings and monitoring wells have shown soil and groundwater at the site and adjacent properties to be contaminated with arsenic, lead, cadmium, selenium, and mercury. Of these metals, arsenic is the principal contaminant. The flooding of the Zoecon site in 1979 resulted in offsite migration of contaminated material. The California Regional Water Quality Control Board (CRWQCB) has issued a number of Cleanup and Abatement Orders requiring Zoecon to determine the extent of contamination and implement mitigation measures. The method and extent of cleanup are currently under negotiation.

Proximity of Chemical Hazard to Marine Resources

The Zoecon site is located about 600 meters west of San Francisco Bay and 1.3 kilometers northwest of the mouth of San Francisquito Creek. Groundwater flow from the site is towards the south and southwest, in the general direction of San Francisquito Creek. Surface water and soil runoff occurring during periodic rains and occasional flooding have contaminated tidal and non-tidal marshes adjacent to the site.

Wells monitoring the shallow aquifer under the site show contamination by arsenic at levels up to 160 mg/l. The average rate of arsenic movement in the shallow aquifer is less than 1 meter per year. At this rate the contaminated groundwater could take several hundred years to reach San Franciso Bay.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ALAMEDA CR.
SAN FRANCISCO
CALIFORNIA
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NEWARK
REDWOOD CITY
EAST PALO ALTO
ZOECON SITE
MENLO PARK
SAN FRANCISQUITO CREEK
BAYSHORE FREEWAY
PALO ALTO
SAN
1 0 1
MILES
2 0 2
KILOMETERS
MOUNTAIN VIEW

Marine Resources at Risk

San Francisquito Creek flows northeast to an area of wetlands along the southwestern boundry of San Francisco Bay. Wetlands and surface waters near Zoecon provide habitat for anadromous fish, including striped bass and sturgeon, although the numbers of fish utilizing habitats near the site is not known. Surf perch and flatfish are also found in the area. Striped bass, sturgeon, and surf perch provide recreational fishing opportunities in the area. There is also a commercial harvest of bay shrimp.

Harbor seals are known to use the southern end of the bay near the site as a nursery area. The endangered brown pelican and California clapper rail use wetlands associated with the creek. Numerous species of shorebirds and wading birds also rest, feed, and nest in wetland areas. The endangered salt harvest mouse uses the wetlands near San Francisquito Creek.

Site Chronology

1926	Chipman Chemical begins sodium arsenite production.
1972	Zoecon occupies the site for insecticide production.
1978	Zoecon changes its name to Rhone-Poulenc, Inc.
1978	State of California confirms the presence of arsenic and begins investigation of the extent of contamination.
1979	Zoecon site flooded, contaminants migrate offsite.
1980	EPA contractor conducts first sampling at site.
1981	EPA contractor conducts site investigation.
1982-1983	CRWQCB issues Cleanup and Abatement orders to Zoecon.
1983	Site listed on the NPL.
1984	Contaminated soil removed from the site, additional monitor of groundwater conducted.

NOAA Reviewer: Stewart McGee, Jr., NOAA Hazardous Materials Response Branch

EPA Contact: Mary Kisner, EPA Region 9.

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Teledyne Wah Chang (X-14)
Albany, Oregon
30 June 1985

Location and Nature of Site

Teledyne Wah Chang is the site of a rare earth metals plant operated by the U.S. Bureau of Mines until purchased by Wah Chang in 1958. Teledyne, Inc. purchased the facility in 1967. The site is located on 110 acres of land in the central Willamette Valley in western Oregon. Murder Creek abuts the property on the north and Truax Creek and the Willamette River form the western boundary.

The extraction and refining of zirconium and hafnium metals from zircon sands have been the primary activity at the site. The production of these rare earth metals generates liquid and solid wastes which have been disposed of in ponds and diked storage areas on site. The company also holds a NPDS permit for waste water discharges.

EPA has completed a Remedial Action Master Plan (RAMP) for the site, but it has not yet been released to the public. The company has expressed a willingness to conduct additional sampling in support of Superfund actions. Further EPA action is on hold pending the availability of Federal funds and the outcome of a lawsuit in the Oregon Supreme Court.

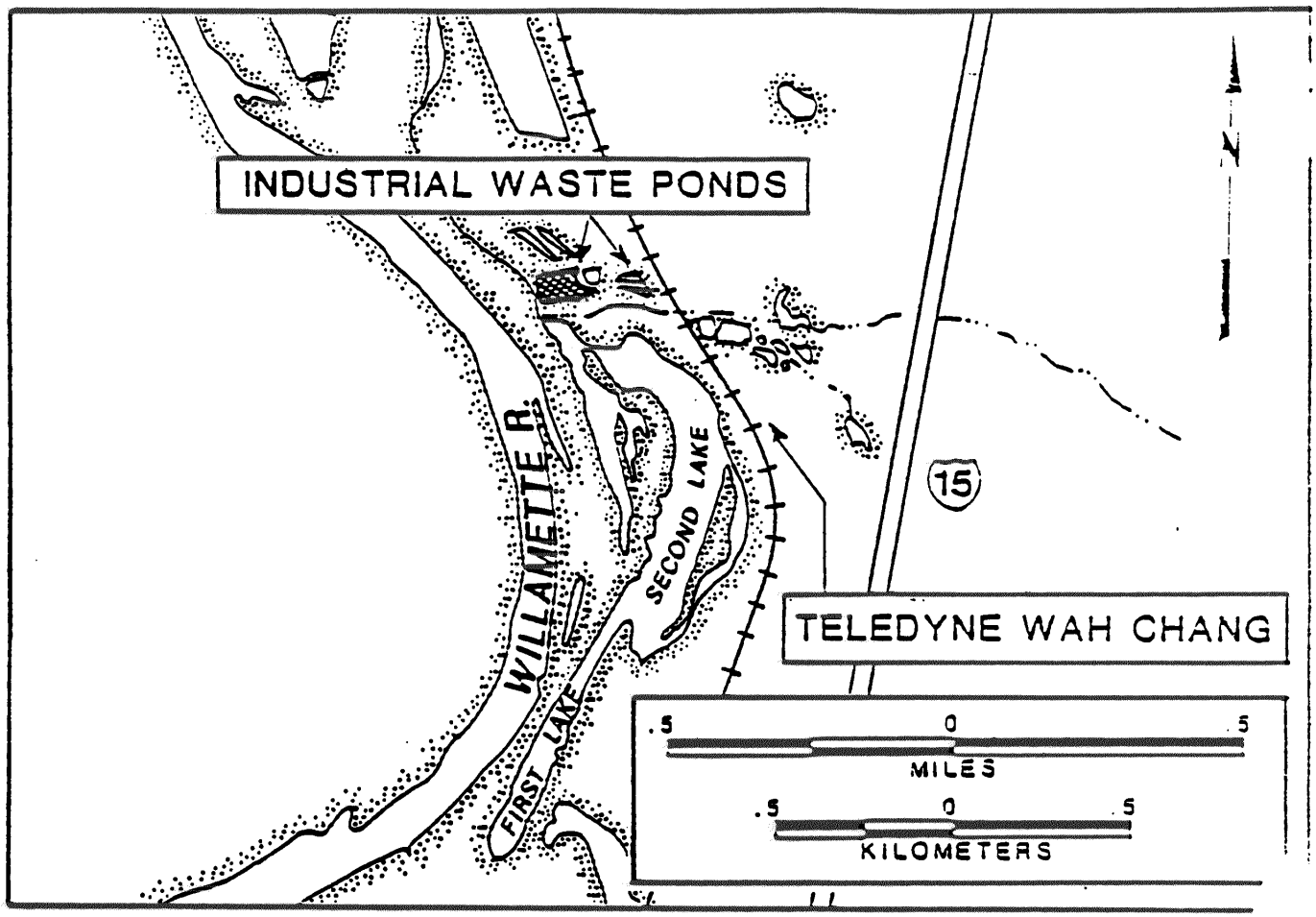
Teledyne Wah Chang has been identified as a responsible party.

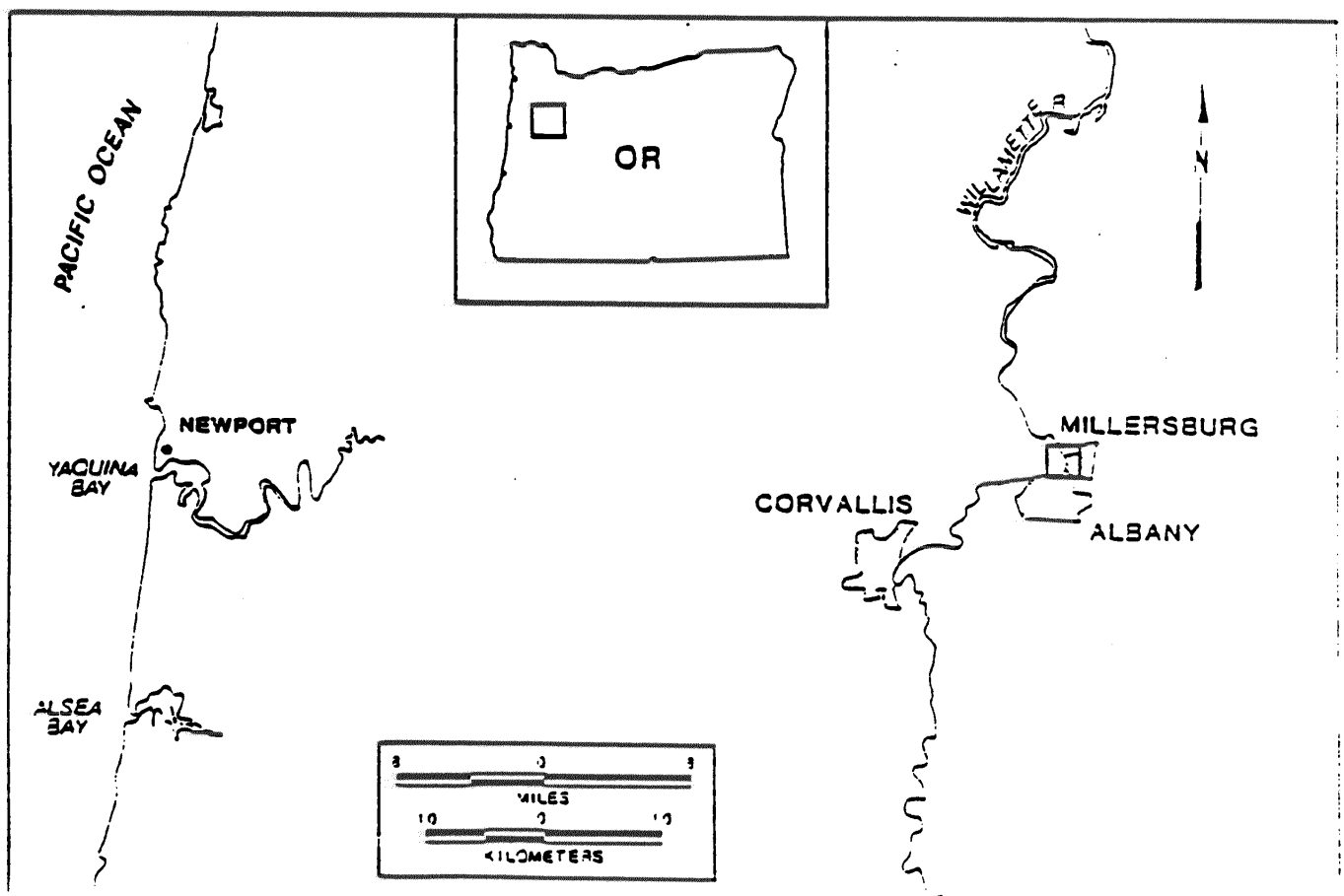
Proximity of Chemical Hazard to Marine Resources

Surface and groundwater from the site flow toward the Willamette River. The discharge from Murder and Truax Creeks enters the Willamette River at Conser Slough towards the north end of the facility.

The Lower River Solids Pond is both the largest disposal area on the site and the closest to the Willamette. The 130-137 meter high diked pond was constructed in 1966 and is approximately 130 meters from the river. Sludges contained in the pond are contaminated with heavy metals and radioactive materials.

Sampling of wells on site has shown metal and radioactive contamination of ground water, including:


INDUSTRIAL WASTE PONDS
WILLAMETTE R.
SECOND LAKE
FIRST LAKE
15
TELEDYNE WAH CHANG
.5 0 .5
MILES
.5 0 .5
KILOMETERS


PACIFIC OCEAN
OR
WILLAMETTE R.
NEWPORT
YAQUINA BAY
ALSEA BAY
MILLERSBURG
CORVALLIS
ALBANY
MILES
KILOMETERS

Barium	up to 5.8 ppm
Cadmium	up to 2.3 ppm
Lead	2.8 ppm
Manganese	130.0 ppm
Uranium	26.3 pCi/l
Thorium	1.1 pCi/l
Radium	5.0 pCi/l

No data are presently available on offsite contamination

Marine Resources at Risk

The Willamette River is an important migratory route for anadromous fish. In addition to a large resident population, the middle and upper river basins contain spawning and reproduction areas. There is no commercial fishery in the river at present, but there has been a historical salmon fishery. Anadromous fishery resources of the Willamette River near Albany include the lamprey, white sturgeon, chinook salmon, coho salmon, steelhead trout, cutthroat trout, and American shad. Numerous non-anadromous species also inhabit the river.

Site Chronology

Pre-1958 Operation of rare earth metal processing facility by U.S. Bureau of Mines.
1958 Purchase by Wah Chang Corporation.
1966 Lower River Solids Pond constructed.
1967 Purchase by Teledyne Corporation.
1983 Completion of EPA RAMP for site.

NOAA Reviewer: Robert Pavia, NOAA Hazardous Materials Response Branch
EPA Contact: Neil Thompson, Project Manager

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Quendall Terminal (UD#2 X-3)
Renton, Washington
30 June 1985

Location and Nature of Site

The Port Quendall Property, which is owned by Puget Timber, Inc. and Altino Property, Inc., is a 20-acre area on the southeastern shore of Lake Washington presently leased by Seaboard Lumber for log storage. The Reilly Tar and Chemical Company ran a chemical processing and landfill operation on the property from about 1915 until 1960.

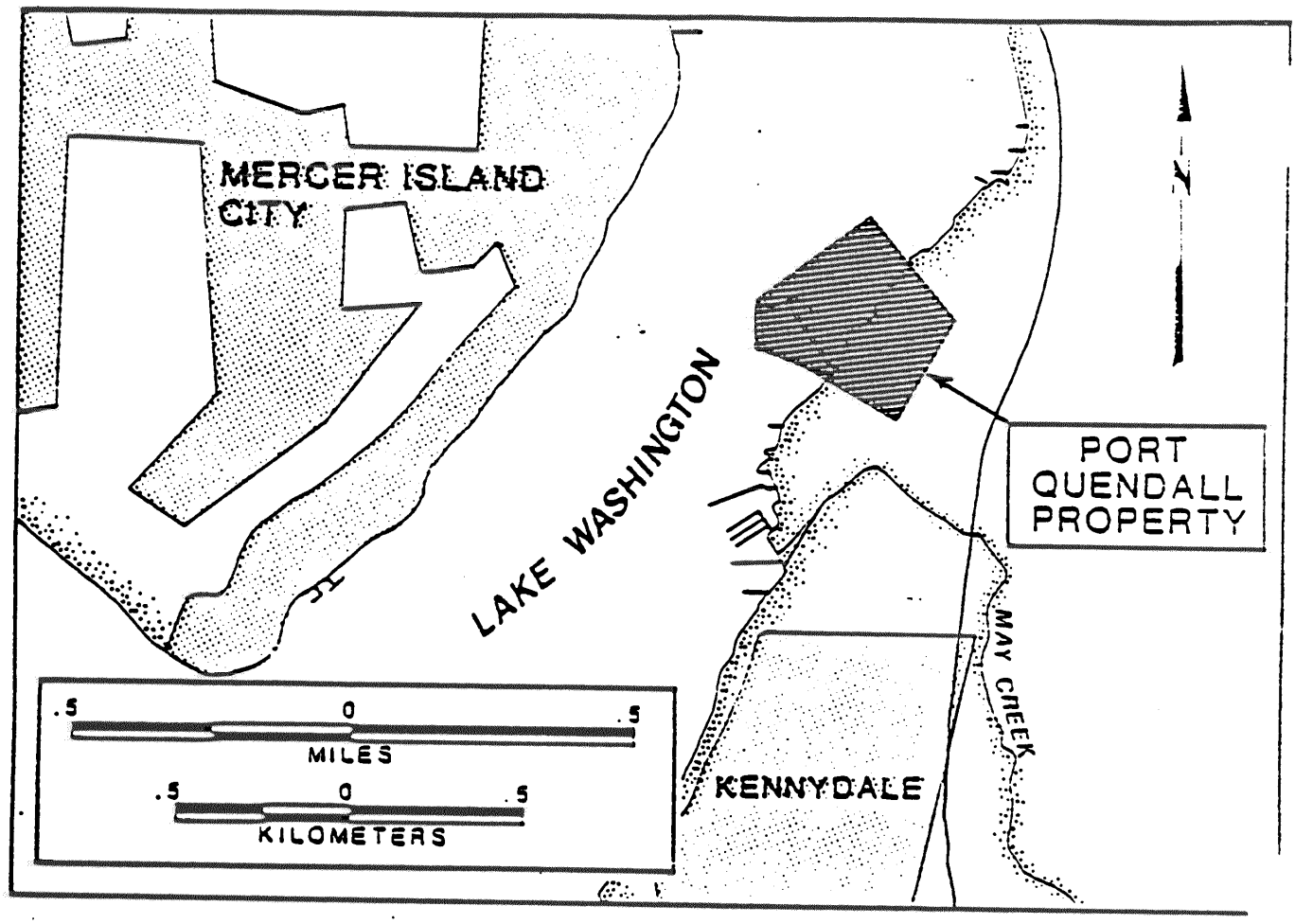
The site is located on an alluvial fan at the mouth of May Creek and is bordered by Lake Washington on the west. The original flow of the creek through the site was altered and the creek bed used as a disposal area. A "T" shaped pier extending into the lake from the property was used to offload coal tar residues from barges for reprocessing at the facility.

Chemical Hazards

Proximity to Marine Waters

Port Quendall is immediately adjacent to Lake Washington, which connects to Puget Sound via Lake Union, the Ship Canal, and the Hiram Chittenden Locks, a distance of approximately 32 kilometers. May Creek forms the southern boundary of the property.

Recent investigations by EPA have found contaminants in areas of the lake bottom near former barge loading areas. Transfer of material from barges to shoreside facilities may have resulted in large amounts of material being released into the lake.


MERCER ISLAND CITY
LAKE WASHINGTON
PORT QUENDALL PROPERTY
KENNYDALE
MAY CREEK
N
.5 0 .5
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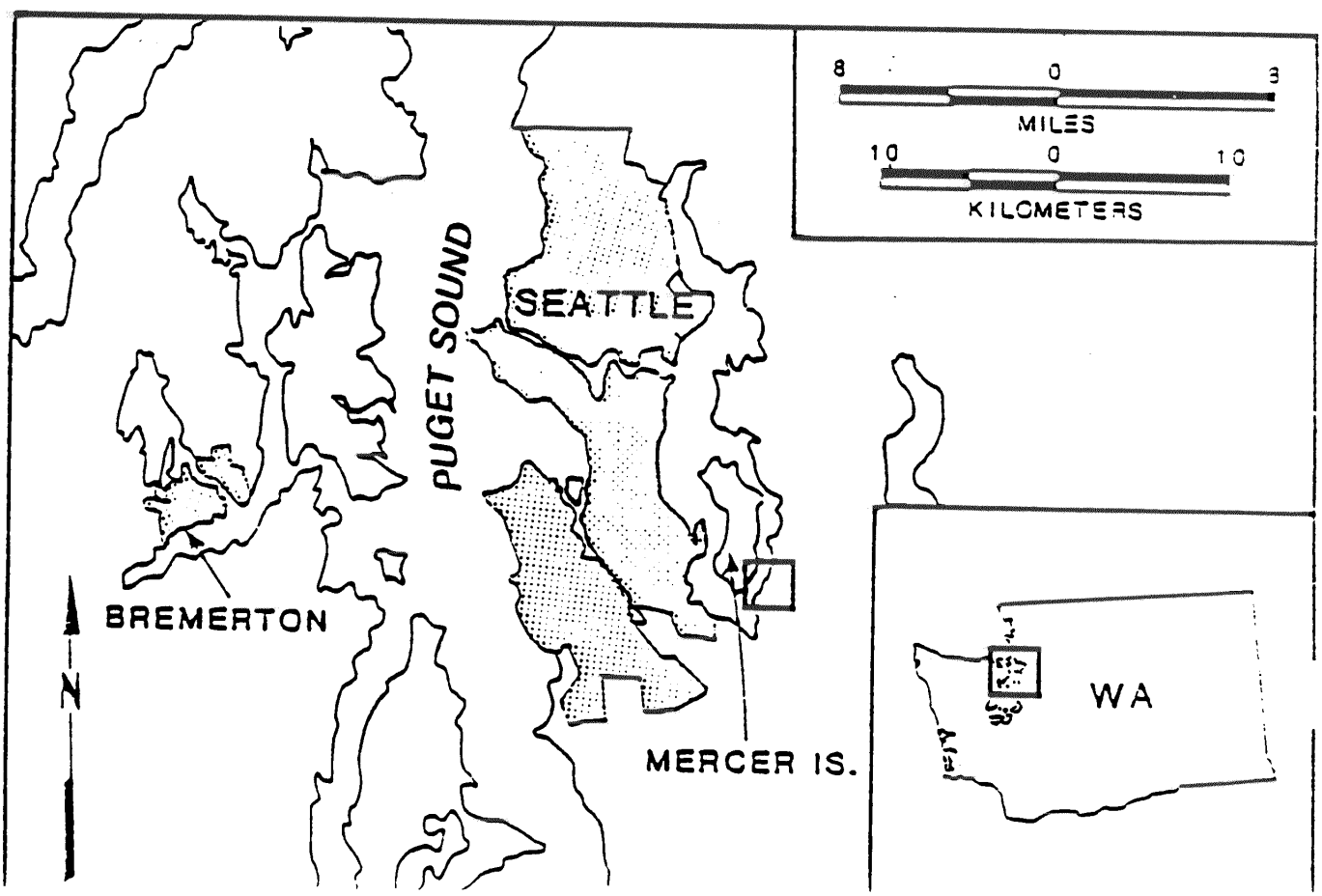
KILOMETERS


8 0 8
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KILOMETERS
SEATTLE
PUGET SOUND
BREMERTON
MERCER IS.
N
WA

Contaminants and Concentrations

PAH contamination exceeds 1% over the large areas of the site, with some samples containing 48% total PAHs. The predominant PAH compounds include naphthalene, phenanthrene, 2-methylnaphthalene, fluoranthene, and acenaphthene. Concentrations of volatile organics range from 100-2,000 ppm.

Bottom sediments in the area of the pier show similar types of contamination, with PAH levels of up to 1.3% in some sediment cores.

Physical Extent of Contamination

Portions of the entire 20-acre site show some level of contamination. The areas of highest contamination include chemical processing buildings, storage tanks and sumps, landfilled industrial wastes, and the filled channel of May Creek.

Sampling of soils on site has revealed large areas of land on the site contaminated with a tarry substance saturated with PAHs and volatile organics. Lake sediments out to 18 meters of water depth 1.4 kilometers from the pier are contaminated with PAHs. However, the majority of contamination is adjacent to the site.

Duration of Contaminant Release

Releases may have occurred during the entire period of site operations. Offsite migration of material through surface runoff and groundwater transport may still be occurring.

Marine Resources

Resources at Risk

Salmon utilization extends to all accessible stretches of May Creek. Coho salmon are the dominant species, with chinook and sockeye occurring rarely. A selected race of sockeye salmon may use the shallow gravel beach areas along the site; such use is typical along the eastern lake shore. Total Lake Washington escapement are about 150,000 sockeye, 30,000 coho, and 10,000 chinook. Freshwater aquatic life reported along the Port Quendall pier near the mouth of May Creek included crayfish, trout, small mouth bass, sculpin, and small crustaceans.

Ability to Document Injury or Loss

The lower five kilometers of May Creek are heavily residential, while the upper watershed contains urban areas and small farms. The principal factors affecting salmon production in this drainage are water quality, water supply, general habitat deterioration, and detrimental effects caused by the Port Quendall contamination. In addition to the contaminated areas of Port Quendall, large scale residential developments on May Creek create water quality problems from storm drains, siltation, road construction, and culverts.

Feasibility of Habitat or Resource Restoration

Contamination levels in May Creek are not known at this time. If sediments are contaminated, dredging is a likely cleanup alternative. Restoration of contaminated sediments in Lake Washington may also be possible. Little baseline data is available on the numbers of salmon utilizing habitats affected by the site.

Site-Related Actions

Summary of EPA/State Response Actions

In the early 1970's, the Municipality of Metropolitan Seattle (METRO) and the Washington State Department of Ecology (DOE) discussed potential problems with proposed site development plans but no formal action was taken. EPA first became aware of the site in 1982, although no enforcement action has been taken to date. A study of contaminated sediment conducted in 1983 is the most recent Federal work at the site. Contractors for Washington DOE ranked the site in 1984 for inclusion on the NPL.

Present Stage of EPA Action at the Site

Public comment on inclusion of the site on the NPL is due by July 1985. No additional action is anticipated by EPA until a final determination is made on inclusion of the site on the NPL. Once that determination is made EPA will begin negotiations in the summer of 1985 with the present owners concerning the completion of a RI/FS. NOAA has requested the opportunity to comment on the scope of any proposed studies under the RI/FS.

Responsible Parties with Adequate Means Identified

The present owners have been identified as a responsible party and have been cooperating with EPA. The former owners and operators of the site may also be responsible parties.

Interest of Co-Trustees in Damage Assessment Investigations

Neither the U.S. Department of Interior nor Washington DOE have made a determination of potential natural resource damages which may be associated with this site.

Site Chronology

1915	Reilly Tar and Chemical begins operations.
1960	Reilly ends operations.
1967-79	Present owners acquire site.
Mid-1970's	Oil tanks on site used for waste oil storage.
1978-9	Oil tanks on site removed.
1980	Site leased for log storage.
1983	Owners conduct on-site contamination survey.
1983	EPA conducts offshore sediment contamination survey.
1984	Proposed listing on NPL.

NOAA Reviewer: Robert Pavia, NOAA Hazardous Materials Response Branch
EPA Contact: John Meyer, Project Manager

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